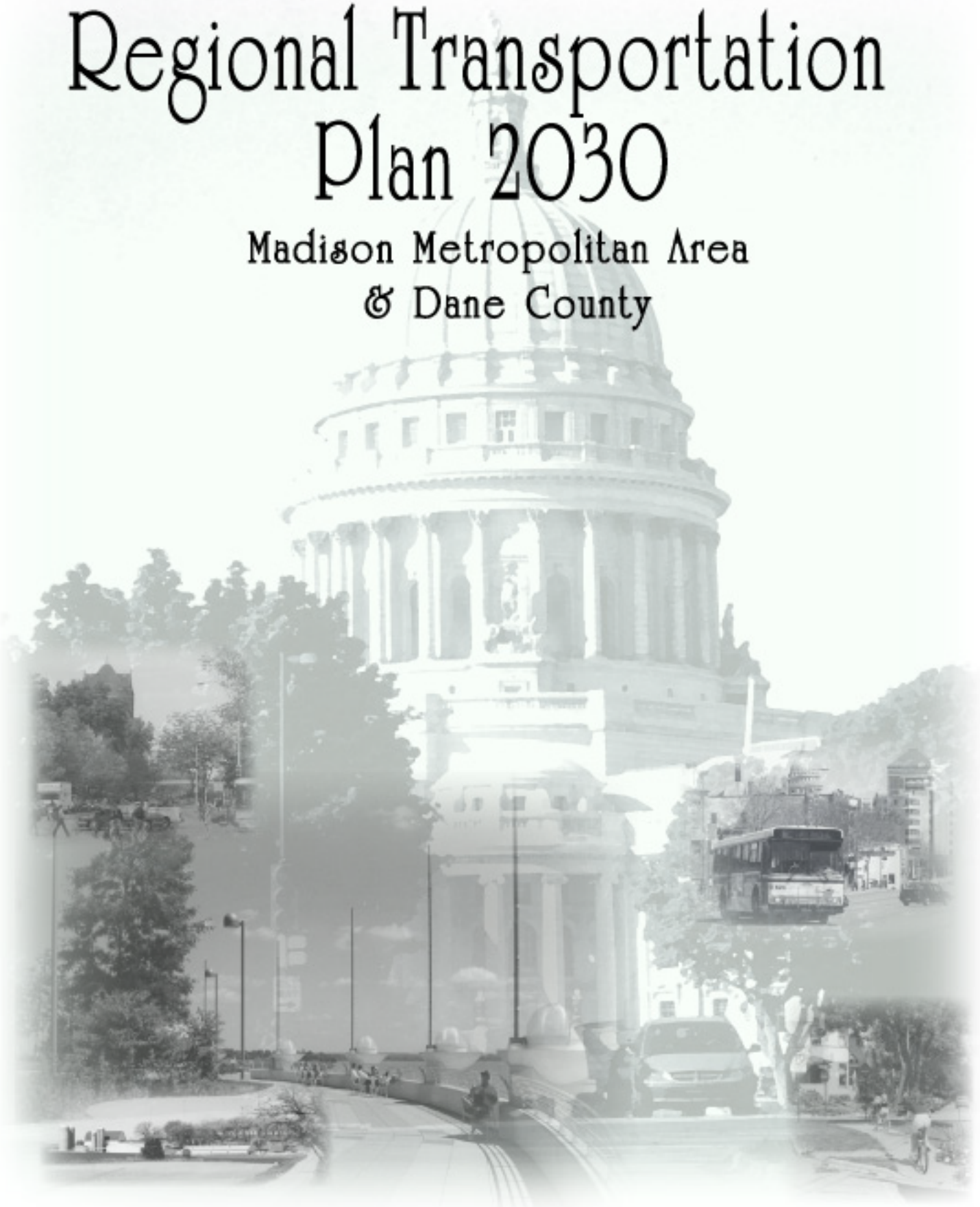
Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County



Prepared by Madison Area Metropolitan Planning Organization

Regional Transportation Plan 2030

Madison Metropolitan Area
& Dane County

Adopted November 1, 2006
by the
Madison Area Metropolitan Planning Organization
121 S. Pinckney St. Suite 400
Madison, Wisconsin 53703

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The preparation of this document has been financially aided in part by funds from the Wisconsin Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

Resolution MPO No. 52

ADOPTING THE REGIONAL TRANSPORTATION PLAN 2030 FOR THE MADISON METROPOLITAN AREA AND DANE COUNTY

WHEREAS, the U.S. Department of Transportation regulations require that the Metropolitan Planning Organization (MPO) for the Madison Urbanized Area in cooperation with the State (Wisconsin Department of Transportation) and with operators of publicly owned transit services (City of Madison, for Metro Transit), shall be responsible for carrying out the metropolitan transportation planning process; and

WHEREAS, the MPO shall approve the metropolitan transportation plan and its periodic updates; and

WHEREAS, the Madison Area MPO has updated the current adopted Vision 2020 *Dane County Land Use and Transportation Plan* and extended the planning horizon from the year 2020 to the year 2030 using new population and employment data from the U.S. Census Bureau and developing revised travel demand forecasts to the year 2030; and

WHEREAS, summary materials on the plan update have been broadly distributed and along with the draft plan was available on the MPO's web site; public information meetings have been held in the development of the plan, including a public hearing; and all testimony and written comments have been considered and changes to the proposed plan have been prepared; and

WHEREAS, the transportation plan is an overall transportation systems plan that provides goals, policy objectives, and recommendations/implementation strategies intended to guide needed improvements to all modes of transportation until the next update of the plan that is required in five years; and

WHEREAS, it is recognized that approval of this plan is in accord with federal rules under the Federal Transportation Equity Act for the 21st Century (TEA-21) and that additional steps and amendments to this plan will be necessary to make it compliant with new rules under the recently passed legislation, The Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU);

NOW THEREFORE BE IT RESOLVED, the Madison Area MPO approves and adopts the Regional Transportation Plan 2030 for the Madison Metropolitan Area and Dane County as the official transportation plan for the region to serve as a guide for transportation planning and system development and as the basis for the MPO's review of proposed projects; and that this plan supersedes the Vision 2020 Dane County Land Use and Transportation Plan.

11/1/06
Date Adopted

Ken Golden, Chair

Regional Transportation Plan 2030
Madison Metropolitan Area and Dane County

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Summary

Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County

Introduction

Behind the idea of planning is the belief that we have the ability to choose the kind of future we will have. While no one can precisely predict the future, it is possible to use our best knowledge and our most effective tools to lay out a plan to produce the kind of region we desire.

Transportation planning has been underway in the Madison Metropolitan Area and Dane County since 1961. The first transportation plan, called the *Madison Area Transportation Study*, was adopted in 1970 and focused on the Madison Urban Area. Subsequent updates to the plan were completed in 1978, 1988, and 1997 to address emerging issues and trends affecting the transportation system. The last full update of the plan, called the *Dane County Land Use and Transportation Plan (Vision 2020),* represents an overall system-level plan that serves as a guide for needed improvements to all modes of transportation which includes auto, truck, transit, rail, air, bicycle, and pedestrian. This plan was reaffirmed in 2000 with no changes.

While the plan is reviewed on a continuing basis, it is important that a re-evaluation occur to determine if the underlying assumptions, objectives, and policies are valid today as an adequate plan for the future. In addition, the current update of this plan is also in response to the requirements of existing federal rules that mandate that regional transportation plans for air quality attainment areas like Dane County be updated every five years.

Purpose

The purpose of this document is to summarize the major goals, key features and concepts, and major recommendations contained in the *Regional Transportation Plan 2030 for the Madison Metropolitan Area and Dane County.* A discussion of existing transportation trends, conditions, and issues affecting the region is contained in the full plan.

Overall Goal

The development of the year 2030 regional transportation plan for the Madison Metropolitan Area and Dane County was guided by the plan's following overall goal:

> *Develop an integrated and balanced land use and transportation system which provides for the efficient, effective, and safe movement of people and goods, promotes the regional economy, supports transportation-efficient development patterns and the regional land use plan, and provides mode choice wherever possible while enhancing and, where relevant, preserving the character and livability of the neighborhoods and residential areas where transportation facilities are located.*

This goal recognizes that the basic role of a transportation system is the safe movement of people and products necessary to keep a community functioning. These demands influence not only the internal structure of the transportation system but also how the Madison Metropolitan Area and Dane County are linked to the rest of Wisconsin and the rest of the nation. It is important, therefore, to maintain mobility on key routes like the Interstate system for through-traffic to places throughout Wisconsin and beyond.

The goal also recognizes that mode choice options need to be provided to meet existing and future mobility needs. In addition, the goal recognizes the inter-relationship between land use development and the transportation system. The region's land use development pattern plays a critical role in determining the viability of mode choice options and the safety and efficiency of the transportation system. At the same time, transportation strategies and investments can support the regional land use plan, the preservation of neighborhoods, and minimize undesirable impacts from the transportation system on the environment.

Key Features/Recommendations

The key features of the regional transportation plan are:

- Provide mode choice options (transit, bicycle, pedestrian, and arterial street and roadway facilities) in meeting existing and future travel needs, and in modifying plans to meet changing conditions.

- Continue to make the most efficient use of the existing transportation system by utilizing:
  - *Travel Demand Management (TDM) Strategies* such as carpools; vanpools; transit; alternate work hours; telecommuting; bicycling support; financial incentives; and parking management.
  - *Transportation System Management (TSM) Strategies* such as access management; intersection improvements; peak period curb-lane parking restrictions; operational improvements (traffic signal coordination, freeway ramp meters, high-occupancy-vehicle (HOV) lanes) and incident management (crashes, construction, special events).
  - *Intelligent Transportation Systems (ITS*) such as traveler information systems; emergency vehicle signal pre-emption; incident detection and response; and public transportation system technology (automatic vehicle location, automatic passenger counters, real time passenger information, electronic fare collection, transit security, and on-board vehicle condition sensors).

- Continue a Madison Metropolitan Area transit expansion emphasis, with ridership expected to increase 30-40% by 2030 by establishing high capacity, fixed-guideway transit service with complementary express bus and connecting local service in an East-West Transit Corridor (e.g. Transport 2020 Study Area). The expansion also assumes commuter transit service (bus or rail) to selected villages and cities outside of the Madison Urban Area and the improvement of downtown/UW campus area circulator service (bus or street-running rail (e.g. streetcar)) for residents, students, employees, and visitors. The plan envisions the eventual expansion of the fixed-guideway transit system to other corridors (e.g., south) with sufficient ridership potential and opportunities to help shape community development and redevelopment patterns.

- Continue to improve and expand upon the regional system of park-and-ride facilities to support ride sharing and transit.

- Continue to plan and provide for a continuous, interconnected roadway system that efficiently collects and distributes traffic within and through the region. (See Future Planned Roadway Functional Classification map.)

- Continue to accept somewhat higher congestion levels (Level of Service D) during the peak hours on streets and roadways before giving consideration to building new or expanded facilities.[1] (See the Appendices volume of the plan for Level of Service examples.) Congestion growth is monitored and traffic management solutions (TDM, TSM, and ITS) will be tried prior to any consideration of expansion. If, following these efforts, congestion continues to grow and have negative impacts on surrounding neighborhoods, capacity enhancement options will be studied. Capacity enhancements may not be always possible or desirable due to negative impacts. (See map of Recommended Major Transportation Improvements and Studies.)

- Continue to seek preservation of future travel corridors for pedestrian and bicycle use, transit, and roadways. In some corridors, simultaneous uses may be possible.

- Continue to provide high quality paratransit service that meets or exceeds Americans with Disabilities Act standards for persons unable to utilize accessible fixed-route bus service.

[1] It is recognized that different standards of deficiency are used on certain arterial roadways like the Interstate and WisDOT's backbone system.

- Continue to provide and improve specialized transportation services (particularly outside the Metro service area) that provide basic mobility and allow persons to access essential services, and strive for increased funding and improved coordination of such services with Metro paratransit service.

- Maintain and reconstruct existing roadways and bridges in a manner that promotes safety, increases efficiency, and minimizes lifetime costs.

- Develop a continuous, interconnected bicycle way network providing reasonably direct, enjoyable, and safe routes between neighborhoods and communities throughout the region. (See map of Bicycle Way System Plan.)

- Develop a continuous, interconnected pedestrian facility network providing reasonable direct and safe routes within and between neighborhoods to destination points in all directions.

- Provide pedestrian and bicycle accommodations along and across all streets as part of new construction and reconstruction where feasible and appropriate in accordance with the U.S. DOT Policy on Integrating Bicycling and Walking into Transportation Infrastructure.

- Recognize limited financial resources available for use on the transportation system and continue to investigate alternative means to finance local, county, and regional transportation improvements and maintenance.

- Provide for the safe, efficient, and reliable movement of goods within and through the region by developing and expanding transportation facilities to accommodate freight movement and to meet the changing needs of the regional economy.

- Provide for the maintenance and construction of structured parking facilities as part of an integrated and balanced land use and transportation system. This includes promoting parking management strategies that encourage the use of alternative modes of transportation, while at the same time meeting user needs.

These features, which represent major policy areas in the transportation system, can be combined in ways to produce certain effects within the region that can also be described in a conceptual context.

Key Concepts

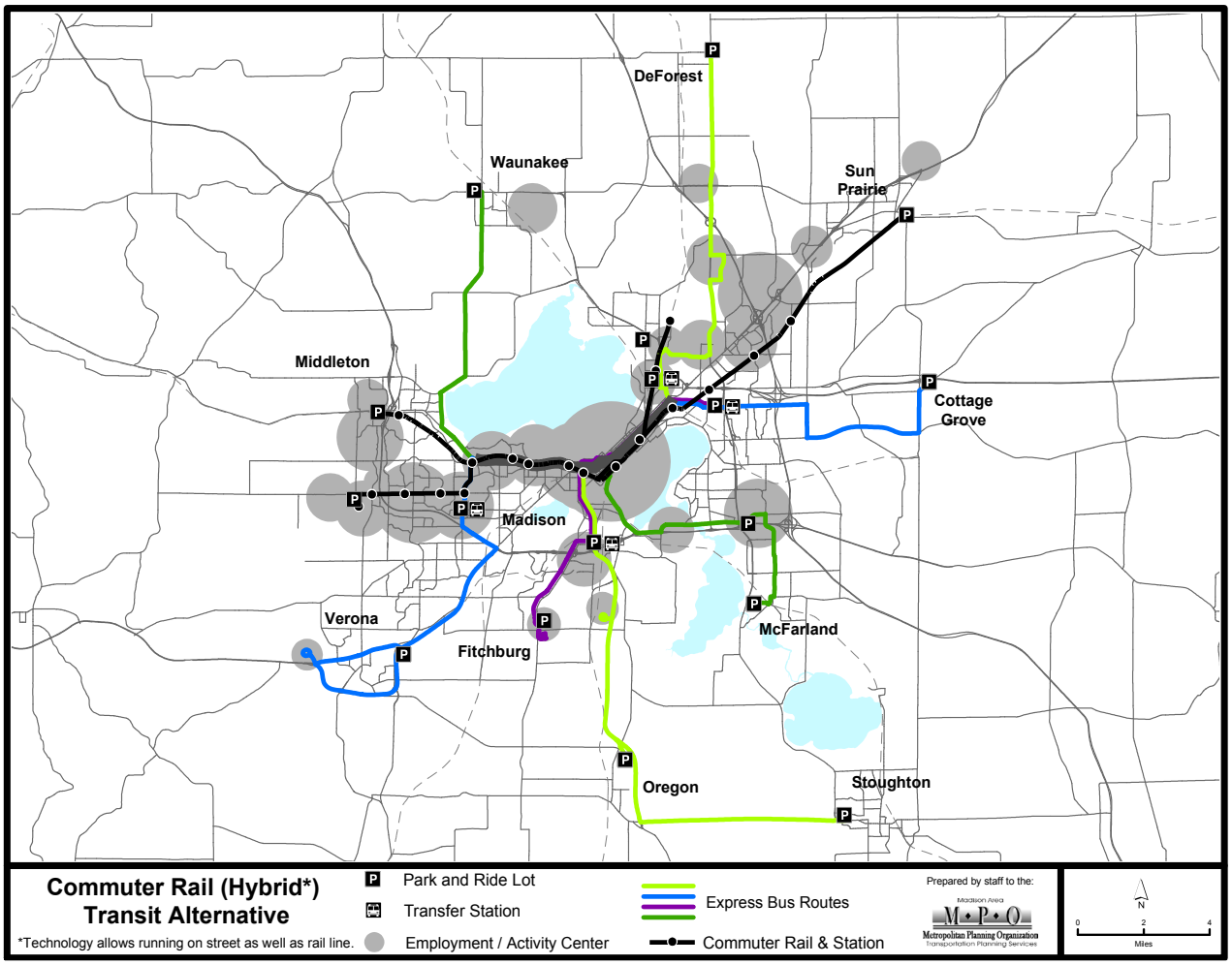
Growth Area and Activity Center Linkage
The plan seeks to maintain mobility and accessibility options throughout the region. Figure 1 illustrates how the major employment/activity centers and cities/villages in the Madison Metro Area are interconnected by the present system of arterial and collector roadways, and how these centers and communities can be served with a potential rail and express bus system with park-and-ride lots. As the outlying cities and villages grow, rail service could be extended in the future.

Balanced Transportation Concept
The plan strives to increase use of travel alternatives to driving alone and minimize demand on the transportation system during peak travel periods. This is especially the case for work trips to central Madison and for school trips. This makes more efficient use of roadway capacity and provides mobility choices for those who wish to use other modes rather than an automobile or who do not have access to an automobile. This plan also recognizes that the majority of trips made within the region will still be made by automobile for shopping and business, and that modifications to the roadway system will be needed.

Traffic Accommodation Concept
The plan continues to accept somewhat higher traffic congestion levels (Level of Service D), particularly during peak hours. This is intended as a means of encouraging travel during off-peak periods, greater use of transit and carpooling, and lessening the need for expanding streets and roadways. Travel on circumferential routes (such as the South Beltline) is accommodated as a means to draw travel to these corridors wherever possible. Techniques of traffic engineering and safety improvements are made to make existing streets and roadways more efficient in moving traffic. Higher mobility levels are also maintained on the Interstate system and other key circumferential routes to ensure efficient movement of people and goods throughout the region.

Traffic Direction Concept
The plan seeks to draw local auto through-traffic to local arterial major travel corridors as a way to reduce the amount of through-traffic penetrating central Madison neighborhoods and other neighborhoods in the region. Maintaining mobility on key regional routes like the Interstate System and the Beltline is also important in order to direct inter-regional through-traffic to these corridors to reduce the potential of inter-regional travel on the local arterial system. Traffic calming and other transportation system management techniques are encouraged to reduce and/or redirect traffic from local neighborhood streets and other sensitive areas. Bypasses around outlying villages and cities are also considered, while at the same time making sure that such facilities do not have negative land use impacts.

FIGURE 1
POTENTIAL COMMUTER RAIL CORRIDOR
AND MAJOR EMPLOYMENT/ACTIVITY CENTERS



Other Plan Concepts

The plan seeks to broaden the understanding of the other modes of transportation and to recognize and encourage: pedestrian and bicycle travel, specialized travel needs of elderly and persons with disabilities, taxi and paratransit services, and integration of travel into multi-modal corridors. In addition, the plan seeks to highlight the importance of preserving corridor lands, particularly rail corridors, for possible future travel uses.

Growth Forecasts

An underlying assumption of the plan is that the population and employment of Dane County and the City of Madison will increase in the future. Dane County's population is expected to grow at a moderate rate. Forecasts indicate a net population increase of 153,450 or an increase of 36% over 30 years. The City of Madison's population forecasts indicate a net population increase of 55,350 or an increase of 26.6% over 30 years. The city's population is expected to grow slower than the county during this entire period and contain 45.4% of the county population in 2030 (see Table 1).

Population forecasts are important because they influence the size of the labor force, which in turn indicate the potential number of work trips which an area could generate. Future projections indicate that from 2000 to 2030, Dane County's labor force is expected to increase 69,374 to a total of 325,125 reflecting an annual growth rate of 0.9%. The City of Madison's labor force is expected to increase 22% but at a slightly slower annual rate (0.7%) compared to the county (see Table 2).

Employment trends and forecasts are important to the transportation system because they indicate the number of work trips that an area will attract. Large shifts in employment concentrations can alter overall travel patterns that can challenge the ability of a transportation system to adjust to the shift.

TABLE 1
POPULATION PROJECTIONS: 2000-2030

	Total Population				Annual Percent Change		
	2000	2010	2020	2030	2000-2010	2010-2020	2020-2030
Dane County	426,526	480,100	527,500	580,000	1.3	1.0	1.0
City of Madison	208,054	227,600	244,100	263,400*	1.0	0.8	0.8
City as % of County	48.8	47.4	46.3	45.4			

**Does not include the population of the Town of Madison that will be brought into the City during this time period.*

By 2030, the county's employment is forecasted to increase to 382,600 or an average of 1.14% per year. Similarly, the City of Madison's employment is forecasted to increase to 244,600 or an average of 1.04 % per year. Comparing the place of work employment trends and forecasts in Table 2 with the trends and forecasts of the labor force, the amount of growth in employment continues to outpace the growth in the labor force in Dane County and the City of Madison.

To fill these jobs, more people from the communities outside of the City of Madison are commuting to Madison for work. Similarly at a county level, work trip commuting from adjacent counties into Dane County are forecasted to nearly double from approximately 31,000 per day in the year 2000 to around 60,000 per day by the year 2030.[2] This increase in work trip commuting will significantly increase the amount of congestion on the arterial roadway system without future improvements to the transportation system involving all modes (transit, roadway, bicycle, and pedestrian).

TABLE 2
LABOR FORCE & EMPLOYMENT PROJECTIONS: 2000-2030

	Year			Forecast	Change		
Labor Force	**1980**	**1990**	**2000**	**2030**	**2000-2030 Amount**	**2000-2030 Percent**	**2000-2030 Annual %**
Dane County	178,136	214,857	255,751	325,125	69,374	27	0.9
City of Madison	95,363	112,239	127,932	156,262	28,330	22	0.7
Employment*							
Dane County	170,000	231,000	285,000	382,600	97,600	34.3	1.14
City of Madison	N.A.	166,340	186,550	244,600	58,050	31.1	1.04

**Place of Work Employment*

[2] Increased telecommuting, continued increases in fuel prices, changes in local housing cost and availability, and reductions in home to work travel distances are among factors that could affect the forecast which is based on a continuation of past trends.

Fore more information contact:

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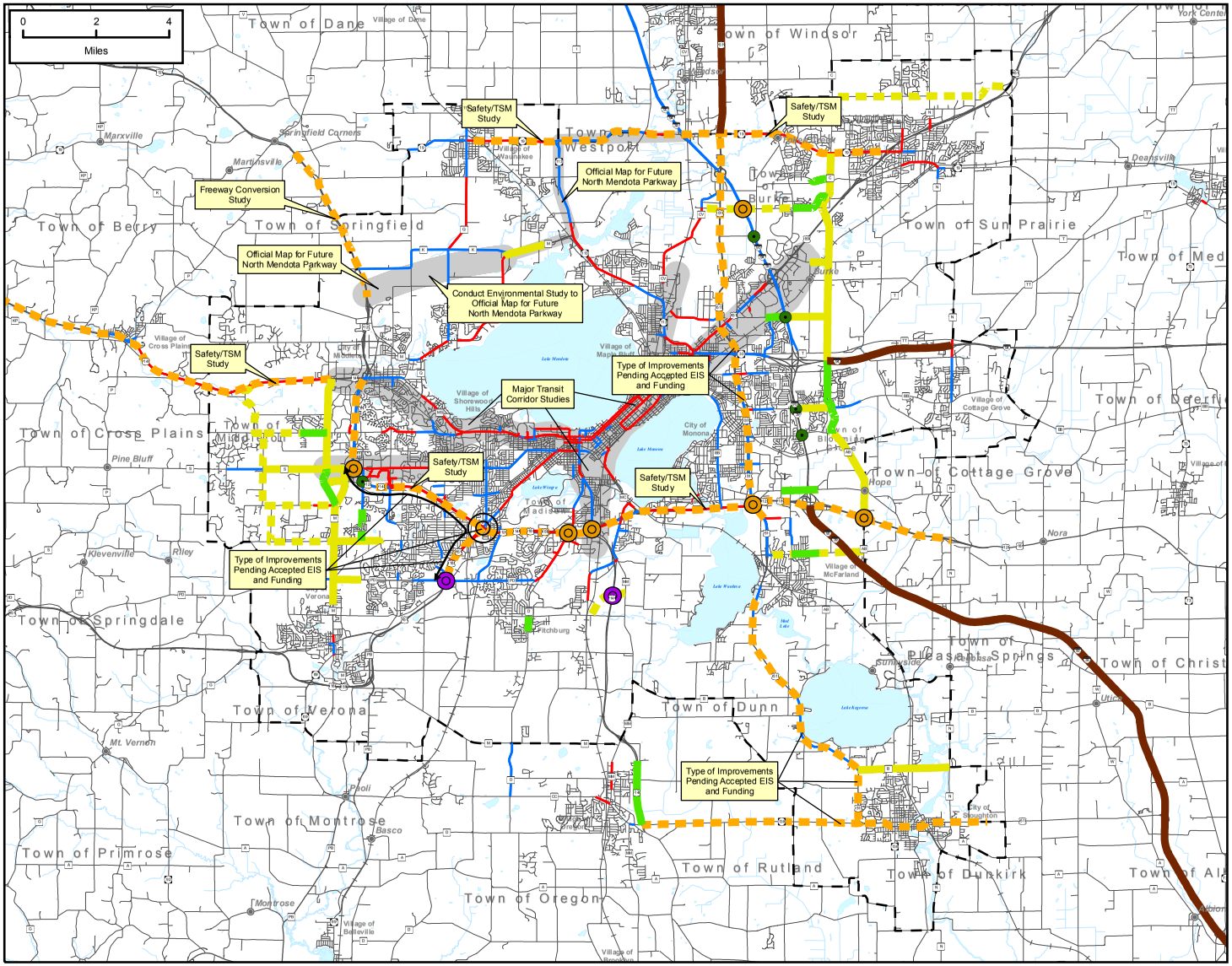
Preparation of this document has been financially aided by funds from the Wisconsin Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services

Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County



Major Transportation Improvements and Studies

- Programmed Bridge Improvement
- Potential Future Interchange
- Future Interchange Study
- Expressway/Freeway Capacity Change
- Capacity Change Already Programmed
- Local Arterial Street Capacity Change
- Current and Future Studies
- Official Map for Future Local Arterial Street
- Congested (Unmet Need)
- Very Congested (Unmet Need)
- MPO Boundary

Source Info:
Street Base: 4/05. Orthophoto Derived (MAMPO/DCLIO).
Functional Classifications: 10/04 (MAMPO, WDOT).
Hydrography: 12/00, 1:24,000 (WDNR).
Civil Division Limits: 1/06. Annexation Records (MAMPO/DCLIO.)
MPO Boundary: 9/02 (MAMPO).

NAME: plains
PRINTED: 11/21/2006
FILE: H:\Arcdoc\Pj Trans\Rev\RTP_Rev\Map_Page.mxd

Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83(91).

Rev: 11/21/06

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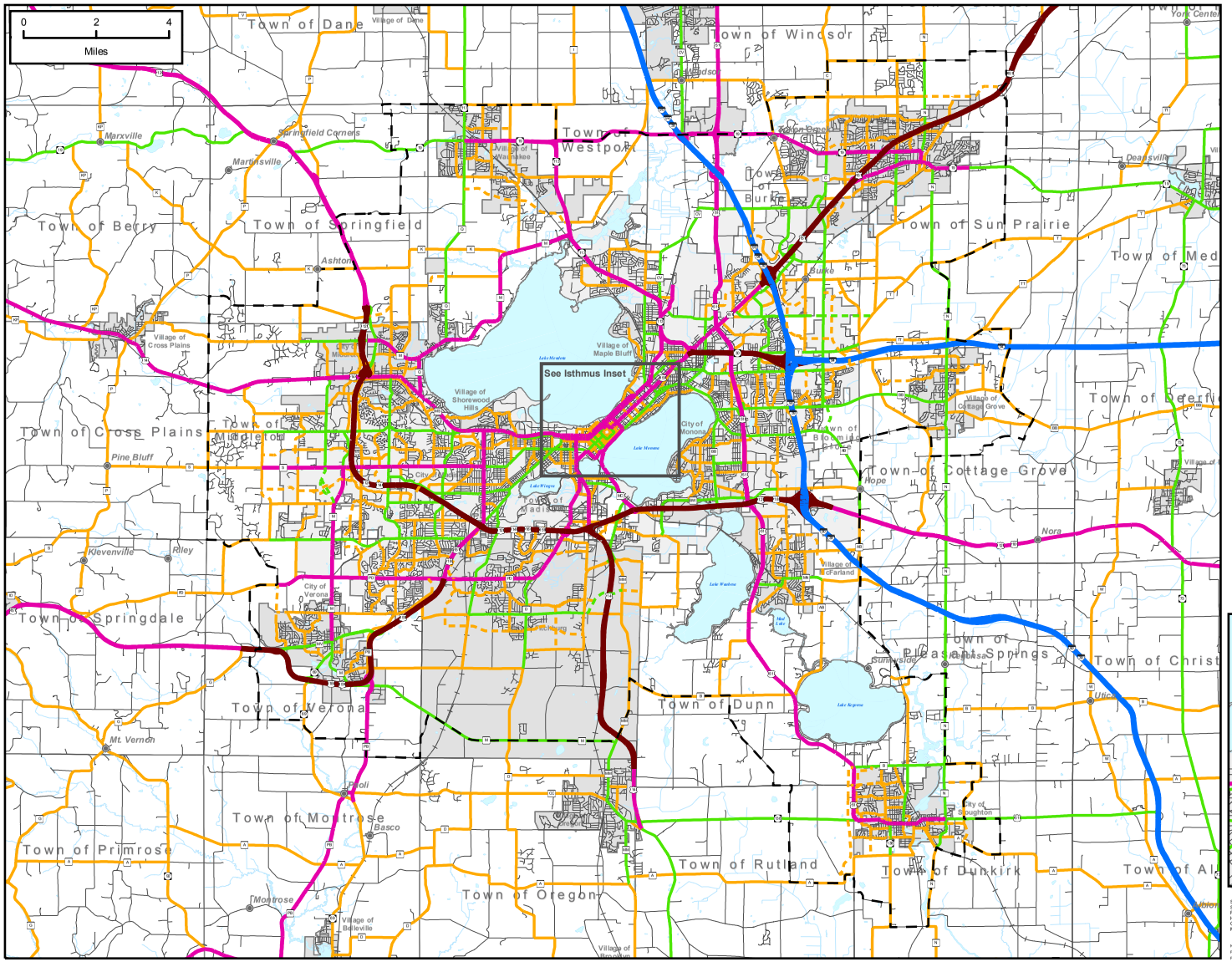
Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County



Future Planned Roadway Functional Classification System (2030)

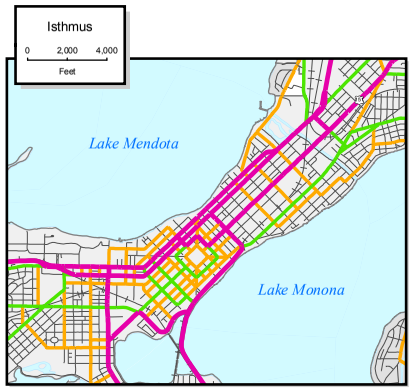
Functional Classifications

- Principal Arterials- Interstate
- Principal Arterials- Other Freeways
- Principal Arterials - Others
- Minor Arterials
- Collectors

Functional Classifications Planned

- Minor Arterials
- Collectors

- MPO Boundary



Source Info:
Street Base: 4/00, Orthophoto Derived (MAMPO/DCLIO).
Functional Classifications: 10/04 (MAMPO, WDOT).
Hydrography: 12/00, 1:24,000 (WDNR).
Civil Division Limits: 5/04, Annexation Records (MAMPO/DCLIO).
MPO Boundary: 9/02 (MAMPO).

NAME: pdrm
PRINTED: 11/21/2006
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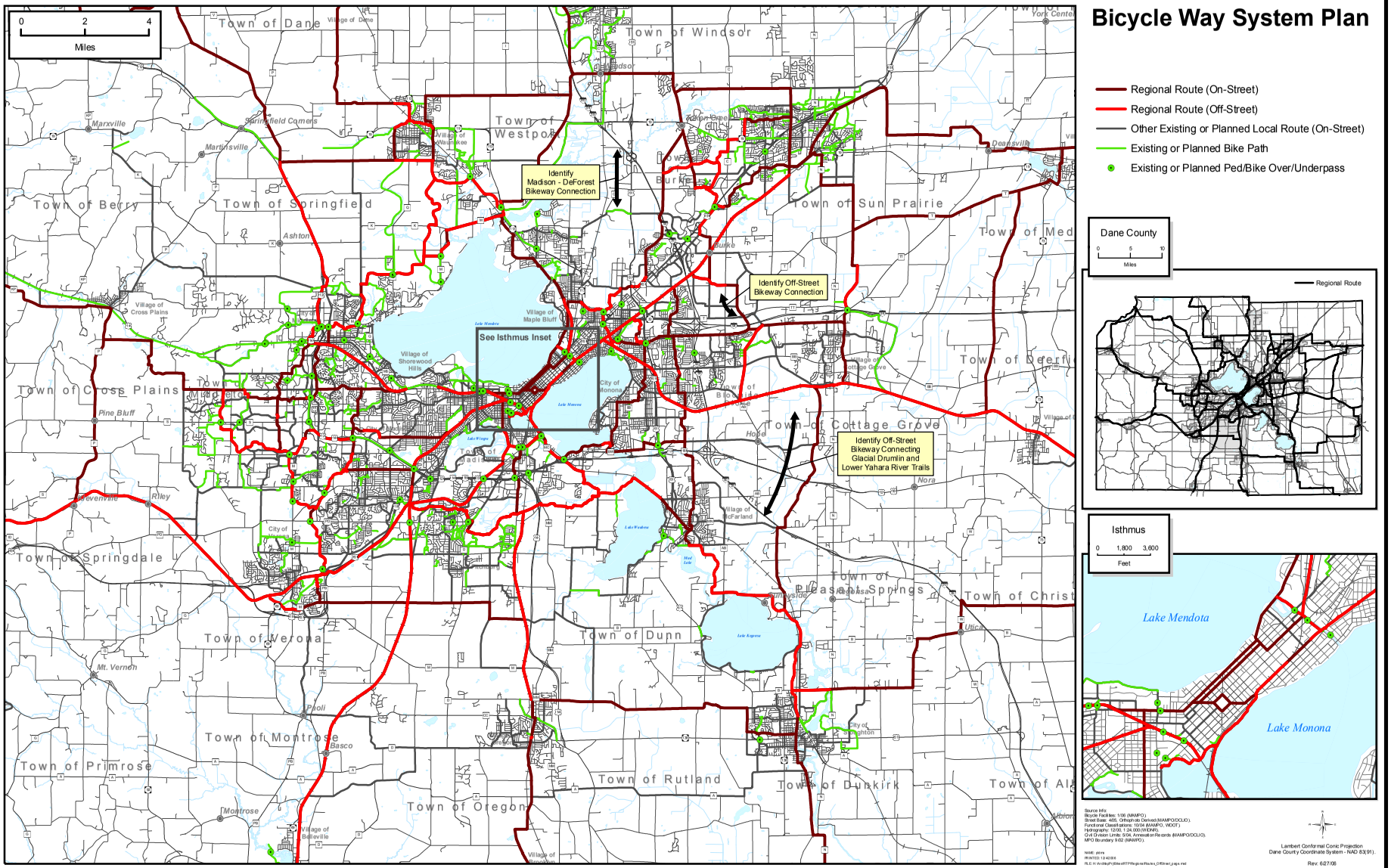
Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83(91).
Rev: 11/21/06

Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services

Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County



Part 1: Introduction and Background

Background to the Regional Transportation Plan

Introduction

Transportation is one of the key contributors to the Madison metropolitan area's quality of life and economic vitality. The need for transportation stems from our need to access goods, services, and other people within and beyond the region. The ease by which we are able to get from home to school, work, medical services, shopping and back again is dependent upon both the location and densities of land use developments and the efficiency and effectiveness of the region's transportation system in serving these developments.

The *Regional Transportation Plan (RTP) 2030 for the Madison Metropolitan Area and Dane County* is based upon and supports the regional land use plan and local comprehensive plans of communities in the county. It is an overall system-level plan that serves as a guide for transportation system planning and development in the region. It establishes the framework upon which public agencies can make consistent and coordinated planning decisions regarding both inter- and intra-jurisdictional transportation. The plan makes recommendations for land use and transportation system coordination and the different elements of the transportation system. These elements include:

- Streets/Roadways
- Public Transit
- Paratransit/Specialized Transportation
- Transportation Demand Management/Ridesharing
- Bicycle Transportation
- Pedestrian Transportation
- Inter-regional Travel
- Freight Transportation
- Rail Transportation
- Air Transportation
- Parking
- Corridor Preservation

The plan recognizes the role that the automobile will continue to play in meeting travel needs. However, it also recognizes the need to continue diversifying our transportation choices, providing convenient transportation alternatives wherever possible. This is particularly true for trips to and within the central Madison area where future roadway capacity expansions are neither feasible nor desirable. The plan includes a balanced and integrated set of strategies for meeting the travel demand of residents and businesses over the next 25 years.

The plan doesn't start from a clean slate. It builds upon the existing transportation system in place today, major projects in progress or with funding commitments included in the Madison Area MPO's *2006-2010 Transportation Improvement Program (TIP)*, and prior and ongoing planning efforts. This plan updates and supersedes the most recent regional transportation plan, the *Dane County Land Use & Transportation Plan (Vision 2020)*, adopted in 1997 and reaffirmed in 2000 with no changes. The plan also builds upon recent and ongoing area and corridor transportation studies.

The regional transportation plan is reviewed on a continuing basis. Federal law requires that the plan be officially updated every five years for areas such as Dane County that are in attainment of Federal air quality standards. However, typically a major update of the plan has been conducted every ten years following the release of decennial U.S. Bureau of Census data on population, households, and place-of-work employment, and the preparation of a countywide land use inventory. It is important that such a major re-evaluation occur to account for recent land use, socioeconomic, and travel trends, changes in land use plans, and to review regional objectives and policies to ensure they are still valid.

This major plan update is timely because many of the communities in the Madison metropolitan area, including the City of Madison, have either recently completed or are nearing completion of work on their local comprehensive plans under the state's Smart Growth law. Dane County is also in the process of completing a Smart Growth plan. MPO staff have provided assistance on and monitored these planning processes to ensure consistency with the regional transportation plan.

The Madison Area Metropolitan Planning Organization (MPO)

The Madison Area Metropolitan Planning Organization (MPO) is the policy body responsible for cooperative, comprehensive regional transportation planning and decision making for the Madison Metropolitan Planning Area as designated by the Governor of the State of Wisconsin under Federal law and regulations. Federal law and regulations require the designation of MPOs in urbanized areas of 50,000 or more in population as a condition of spending Federal highway and transit funds. The goal of the MPO planning process is to build regional agreement on transportation investments that balance roadway, public transit, bicycle, pedestrian, and other transportation needs and support regional land use, economic, and environmental goals and plans.

The Madison Area MPO was created through an agreement between the Governor and the City of Madison, effective November 29, 1999, redesignating the MPO for the Madison Urbanized Area in accordance with Federal law. The Madison Area MPO assumed the responsibility to conduct transportation planning and programming for the metropolitan area from the previous MPO, the Dane County Regional Planning Commission (DCRPC) following the DCRPC's reorganization. The DCRPC had served as the designated MPO for the Madison Urbanized Area since 1973. Areawide transportation planning in the Madison area dates back to 1961.

Madison Area MPO Urban and Planning Areas

The Madison Metropolitan Planning Area consists of the City of Madison and the Madison Urban Area, including all or portions of 27 cities, villages, and towns that are or are likely to become urbanized within the next 25-year planning period (See Figure 1). In addition to areas likely to become urbanized, the planning boundary also includes other areas that are important from a transportation planning perspective such as corridors where potential or planned roadway improvements are located that may have significant impacts on regional travel patterns. The planning area covers approximately 343 square miles. The 2000 Census population within the planning area was 350,247, 82% of the countywide total of 426,526.

Within the Madison Metropolitan Planning Area lies the Madison Urban Area (also shown in Figure 1). The urban area is based upon the urbanized area, which is a statistical geographic entity defined by the U.S. Census Bureau and consists of a central core and adjacent densely settled territory that together contain at least 50,000 people, generally with an overall population density of at least 1,000 people per square mile.

Following the delineation of the urbanized area after each decennial Census, MPOs and State and local officials are required by Federal law to cooperatively fix new urban area and planning area boundaries. The urban area must include the Census-defined urbanized area, but the boundaries can be adjusted outward in order to smooth out irregularities, maintain continuity of peripheral transportation routes, and encompass employment areas and fringe areas having or soon to have (i.e., within five years) residential, commercial, or industrial development. Both the urban area and planning area boundaries must be approved by the State and the Federal Highway Administration (FHWA).

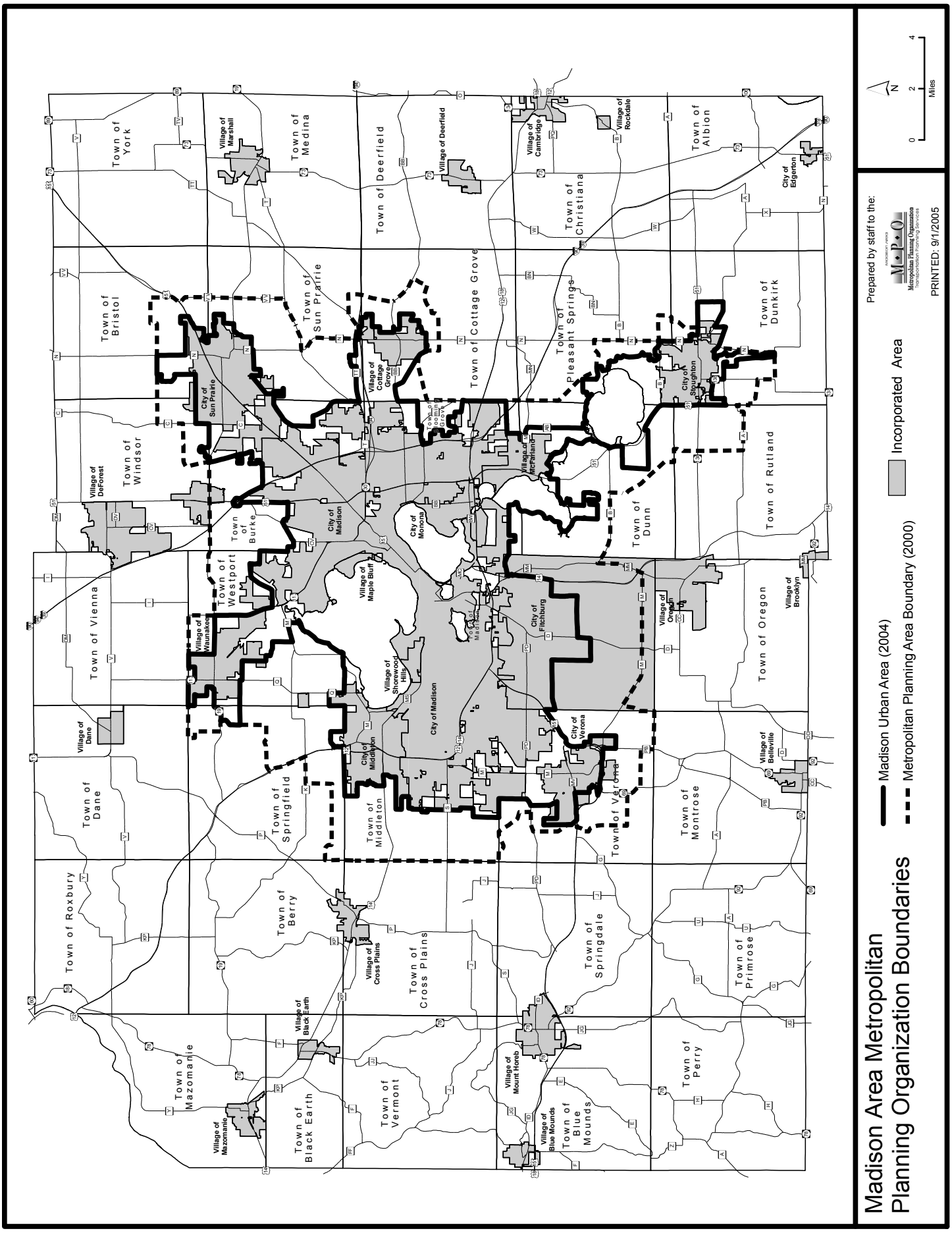
The Madison Urban Area and Metropolitan Planning Area boundaries were last updated in 2002 following the 2000 Census. The Census-defined Madison Urbanized Area was expanded considerably with the Cities of Sun Prairie, Verona, and Stoughton and the Villages of Cottage Grove and Waunakee all being added. This resulted in a substantial expansion of the Madison Urban and Metropolitan Planning Areas.

While the application of the Federal metropolitan transportation planning and programming requirements only applies to the Metropolitan Planning Area, the MPO plans for the Madison area have always covered the entire county. This plan also extends to the County boundary.

Governance Structure

The Madison Area MPO is currently governed by an 11-member Policy Board. The City of Madison Mayor appoints five (5) members, the Dane County Executive appoints three (3) members, one member is appointed to represent other cities and villages, one member is appointed to represent towns, and the Wisconsin Department of Transportation (WisDOT) Secretary appoints one member.

FIGURE 1


Madison Area Metropolitan
Planning Organization Boundaries
Madison Urban Area (2004)
Metropolitan Planning Area Boundary (2000)
Incorporated Area
Prepared by staff to the:
Metropolitan Planning Organization
PRINTED: 9/1/2005
N
0
2
4
Miles
Town of York
Village of Marshall
Town of Medina
Town of Deerfield
Village of Deerfield
Village of Cambridge
Village of Rockdale
Town of Albion
City of Edgerton
Town of Christiana
Town of Bristol
Town of Sun Prairie
Town of Cottage Grove
Town of Pleasant Springs
Town of Dunkirk
City of Sun Prairie
Village of Cottage Grove
City of Stoughton
Town of Windsor
Village of DeForest
Town of Burke
City of Madison
City of Monona
Village of McFarland
Town of Dunn
Town of Rutland
Town of Vienna
Town of Westport
Village of Maple Bluff
Village of Waunakee
Village of Shorewood Hills
City of Fitchburg
Village of Oregon
Village of Brooklyn
Town of Oregon
Village of Dane
Town of Dane
Town of Springfield
Town of Middleton
City of Middleton
City of Verona
Town of Verona
Village of Belleville
Town of Montrose
Town of Roxbury
Town of Berry
Village of Cross Plains
Town of Cross Plains
Town of Springdale
Town of Primrose
Village of Black Earth
Town of Mazomanie
Village of Mazomanie
Town of Black Earth
Town of Vermont
Village of Mount Horeb
Village of Blue Mounds
Town of Blue Mounds
Town of Perry

The governance structure of the Policy Board is in the process of being revised to respond to the expansion of the Madison Urban and Metropolitan Planning Areas following the 2000 Census. The Madison Area MPO approved the change in the governance structure and the agreement, which has to be ratified, has been circulated to communities within the planning area for signature. Following the signature of communities making up 75% of the population within the planning area, the agreement will be sent to the Governor for signature at which time it will become effective. The new governance structure provides for a 14-member Policy Board with two additional appointments by the smaller cities and villages and one additional appointment by the City of Madison Mayor.

Madison Area MPO Responsibilities

MPOs were created to ensure that expenditures of Federal funds for transportation projects and programs were based upon a "continuing, cooperative, and comprehensive" (3-C) planning process. MPOs have four essential functions:

1. Establish and maintain a neutral setting for regional cooperation and decision-making through the 3-C transportation planning process.

2. Evaluate transportation alternatives and strategies through studies and plans outlined in the annual Unified Planning Work Program (UPWP).

3. Develop and maintain a long-range multi-modal regional transportation plan (RTP) for the metropolitan area covering a planning horizon of at least twenty years.

4. Develop a short-range transportation improvement program (TIP) that is based on the RTP to provide for transportation investments to meet identified needs.

A fifth function or responsibility is to involve the general public and all significantly affected sub-groups in carrying out the four essential functions listed above. The Madison Area MPO has a separate document, the Public Participation Plan, which specifically addresses public participation activities.

One of the MPO's most important responsibilities is to make decisions about Federal transportation funding. As an urban area over 200,000 in population, the Madison Area MPO receives a direct allocation of funding under the Surface Transportation Program – Urban (STP-U). In 2006, this allocation was $6.2 million. This funding can be used for improvements to arterial and collector roadways and other transportation improvements such as transit, bicycle, and pedestrian facilities. The Madison Area MPO prioritizes use of these funds. Other than these funds, the MPO does not have direct control over other Federal transportation funding. However, the MPO does set priorities for regional transportation projects and identifies funding sources of proposed projects through the RTP and TIP development processes, conducted in consultation with WisDOT, Metro Transit, and local units of government in the metropolitan area. In this way, the MPO is responsible for the coordination of the allocation of Federal transportation funds.

Intergovernmental Coordination and Public Involvement

In accordance with Federal law and regulations, the Madison Area MPO is responsible for carrying out the metropolitan transportation planning in cooperation with WisDOT, the City of Madison owned public transit agency Metro Transit, and local units of government in the metropolitan area. The process is designed to be cooperative such that no single agency or organization is given complete responsibility for the planning, construction, operation, or maintenance of the region's transportation system. The Madison Area MPO, WisDOT, and Metro Transit function under a Memorandum of Agreement, which sets out the planning responsibilities of each agency.

The Madison Area MPO Policy Board includes a representative from WisDOT and five representatives appointed by the City of Madison Mayor. The Board also includes members representing other communities in the MPO planning area. As noted above, the governance structure is in the process of being changed to increase representation of the smaller cities and villages within the metropolitan area. The new structure will also require Policy Board members to be either local elected officials or persons with a significant role in operating a major mode of transportation.

The Policy Board has established an advisory intergovernmental technical coordinating committee (TCC) to assist in carrying out its responsibilities. The MPO Board also utilizes a number of other local and county committees and commissions as part of its role in serving as a forum for cooperative decision making on transportation planning issues. The TCC is composed of persons representing various agencies or facets of transportation planning. The TCC reviews and advises on all transportation planning matters, including preparation of the RTP, and makes recommendations to the MPO Policy Board.

The Policy Board has also established a citizen advisory committee (CAC), which includes representatives from community organizations, interest groups, businesses, and other citizens. The CAC meets regularly and assists in reaching out and informing others of the planning process.

The MPO has a Public Participation Plan, which details the agency's public involvement activities, including the advisory committee structure and the provision of information and opportunities for public comment and review. The MPO has used this plan as a guide for the public involvement process for the RTP.

Public meetings have been held during the beginning of the process and toward the end of the process, including a public hearing on the draft plan. The public involvement process has also included participation in and coordination with WisDOT on its statewide long-range transportation plan, which is currently being developed, and local "Smart Growth" comprehensive plans prepared or being prepared by Dane County, the City of Madison, and other local units of government within the MPO planning boundary. Such coordination included assistance with and use of public surveys conducted by the City of Madison and Dane County on transportation and land use issues as part of their comprehensive planning processes.

In accordance with Title VI and Environmental Justice (EJ) requirements, the MPO took steps to ensure that all persons, including those with a disability or language barrier, had opportunities to participate in the planning process. This included holding meetings in or near neighborhoods with significant concentrations of EJ populations, posting notices of these meetings in both English and Spanish at community centers and other locations, and including representatives of minority and disability groups on the citizen advisory committee.

Requirements for the Regional Transportation Plan

Federal law and regulations require that the regional transportation plan:

- Identify transportation policies, strategies, and projects for the future;
- Determine demand for transportation facilities and services for at least a 20-year period;
- Identify congestion management strategies to address future demand;
- Maintain a multi-modal focus;
- Concentrate on the systems level, including streets/roadways, transit, bicycle, pedestrian, and inter-modal connections;
- Estimate costs and identify reasonably available financial sources for operation, maintenance, and capital investments; and
- Determine ways to preserve existing roads and facilities and make efficient use of the existing system.

Metropolitan Planning Factors

The following eight (8) planning factors are to be used to guide development of the plan. The planning factors are outlined in the Safe, Accountable, Flexible, Transportation Equity Act—A Legacy for Users (SAFETEA-LU), approved in August 2005. They slightly modify the planning factors of the preceeding transportation legislation, the Transportation Equity

Act for the 21st Century (TEA-21). The seven factors under TEA-21 were expanded to eight by separating out safety and security components (factors #2 and #3) and revising the scope of environmental concerns (planning factor #5) to include a specific requirement to "promote consistency between transportation improvements and State and local planned growth and economic development patterns."

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.

2. Increase the safety of the transportation system for motorized and non-motorized users.

3. Increase the security of the transportation system for motorized and non-motorized users.

4. Increase the accessibility and mobility of people and for freight.

5. Protect and enhance the environment, promote energy conservation, and improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

7. Promote efficient system management and operation.

8. Emphasize the preservation of the existing transportation system.

Congestion Management System
As a metropolitan area with a population over 200,000, the Madison area is designated under federal law as a "transportation management area (TMA)." TMAs must have a congestion management system (CMS) that identifies actions and strategies to reduce congestion and increase mobility.

Environmental Justice
The goal of "environmental justice" is to ensure that services and benefits are distributed fairly to all people, regardless of race, national origin, or income and that they have access to meaningful participation. The legal foundation for environmental justice is the Civil Rights Act of 1964, which prohibits discrimination in any program receiving federal assistance.

The Madison Area MPO must ensure that all segments of the population have been given an opportunity to participate in the planning process. The MPO must also ensure that the impact of proposed transportation investments on environmental justice population groups is part of the RTP's evaluation process.

It should be noted that this plan is being completed according to the requirements of TEA-21 as allowed under the recently adopted SAFETEA-LU Legislation. The plan will be amended in 2007 to fully address the new requirements under SAFETEA-LU. Federal rules on the new metropolitan planning requirements under SAFETEA-LU are expected to be finalized in early 2007. (See page 189 for a discussion of expected changes or additions to be made to the plan in order to meet the SAFETEA-LU requirements.)

Emerging Socio-Economic and Land Use Trends and the Transportation System

Introduction

The past three decades have witnessed significant changes in the way in which Americans live, work, shop and play. Although these changes are often difficult to measure quantitatively, they continue to impact our lives. Changes in energy supplies, household composition, age of the population and employment opportunities have all had a major influence on the way the region has grown and developed. The next three decades will surely experience a continuation of many of these trends as well as newly emerging changes that will alter our preferences about where to live, work and play. Since these new or emerging trends will impact where and how the region develops, it is important that they be discussed and considered in preparation of an areawide transportation plan.

The trends to be discussed are divided into four general subject areas:

- Demographic, which addresses changes and shifts in the population, household size, and population composition;
- Housing, which notes the trends in types and location of future housing;
- Economic, which looks at trends in employment and labor force; and
- Land Use, which highlights changes in the location and composition of urban and rural development.

Following the discussion of the emerging trends is a presentation of the future outlook for the Madison Metropolitan Area and Dane County based, in part, on trends, on past experience, and on current adopted policy.

Demographic

Population Growth

The rate of population growth in Dane County has increased each of the last two decades, while the City of Madison's population grew at a slower rate as shown in Table 1. Although the City of Madison's population has continued to increase since 1970, its overall percentage share of the county's population continues to decline.

TABLE 1
POPULATION GROWTH: 1970-2000

	Total Population				Annual Percent Change		
	1970	1980	1990	2000	1970-1980	1980-1990	1990-2000
Dane County	290,272	323,545	367,085	426,526	1.1	1.3	1.6
City of Madison	173,258	170,616	190,766	208,054	-0.2	1.2	0.9
City as % of County	59.7	52.7	52.0	48.8			

Source: U.S. Census Bureau and Dane County Regional Planning Commission

The City of Madison's population grew more slowly than the county during this entire period. The city represented 49% of the county population in 2000.

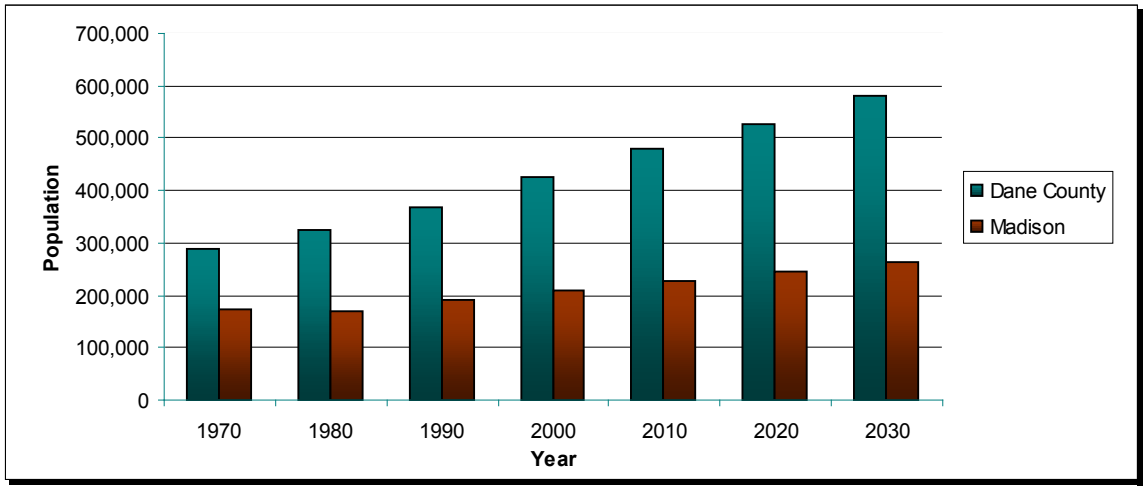
Dane County's population is expected to grow at a moderate rate. Forecasts indicate a net population increase of 153,475 or an increase of 36% over 30 years. The county's population is forecasted to grow the fastest in the 2000–2010 period and then slow a little over the next two decades. The City of Madison's population forecasts indicate a net population increase of 55,350 or an increase of 26.6% over 30 years. The city's population is expected to grow more slowly than the county's during this entire period and contain 45.4% of the county population in 2030 (see Table 2 and Figure 2, on the next page).

TABLE 2
POPULATION PROJECTIONS: 2000-2030

	Total Population				Annual Percent Change		
	2000	**2010**	**2020**	**2030**	**2000-2010**	**2010-2020**	**2020-2030**
Dane County	426,526	480,100	527,500	580,000	1.3	1.0	1.0
City of Madison	208,054	227,600	244,100	263,400*	1.0	0.8	0.8
City as % of County	48.8	47.4	46.3	45.4			

**Period from 2025 to 2030 is a prorated estimate.*

FIGURE 2
POPULATION GROWTH AND PROJECTIONS: 1970-2030



Households and Household Size

A national phenomenon with significant effects on future growth and development patterns is the continuing growth in the number of households and the decline in household size. National trends of smaller families and more single person households will continue to contribute to smaller households.

Since the 1970s, household growth has been increasing faster than population growth. From 1970 to 1980, the number of households in Dane County grew 36.2% (see Table 3, on the next page) compared to a population growth of 11.5% (see Table 1). Similarly, between 1980 and 1990, the household growth rate was 18.4% compared to a population increase of 13.5%, and from 1990 to 2000, the household growth rate was 21.5% compared to a population increase of 16.2%. The City of Madison's household growth also occurred at a faster rate than its population growth over the last three decades.

The number of Dane County's households is expected to grow at a moderate rate. Forecasts indicate a net household increase of 69,600 or an increase of 40.1% over 30 years. The number of City of Madison's households is forecasted to grow 29,100 or increase 32.7% over 30 years. The city's share in the number of the county's households is expected to decrease from 51.3% in 2000 to 48.6% in 2030 (see Table 4, on the next page, and Figure 3).

As the number of smaller households increases, the average household size throughout Dane County continues to decrease. Households are decreasing in size primarily due to the divorce rate, a decrease in the birth rate, the postponement of marriage, and an increase in the proportion of the population age 65 and older. As households decline in size, the need for additional housing increases.

TABLE 3
HOUSEHOLD GROWTH: 1970-2000

	Number of Households				Percent Change		
	1970	1980	1990	2000	1970-1980	1980-1990	1990-2000
Dane County	88,874	120,601	142,786	173,484	36.2	18.4	21.5
City of Madison	55,019	66,451	77,361	89,019	20.8	16.4	15.1

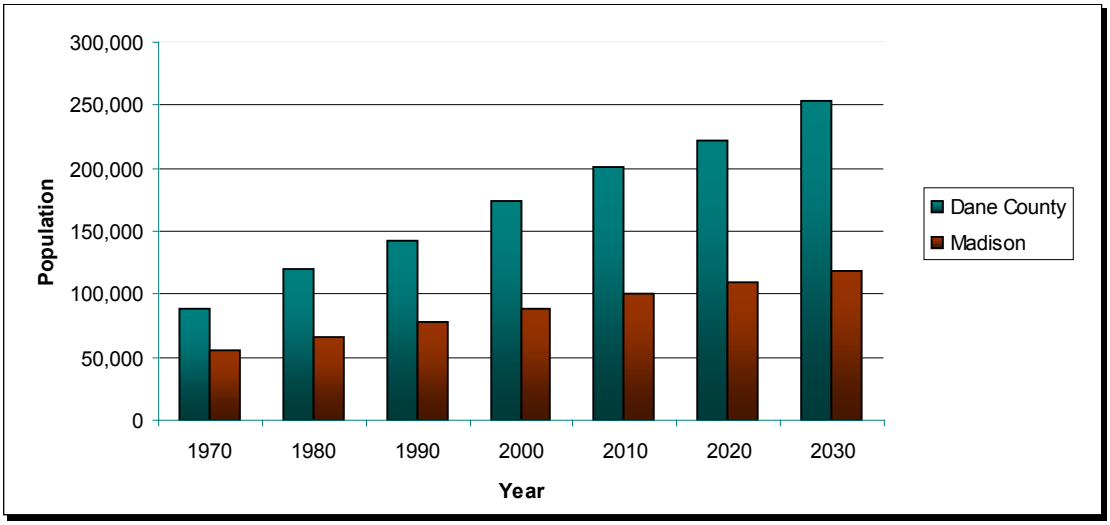
Source: U.S. Census Bureau and Dane County Regional Planning Commission

TABLE 4
HOUSEHOLD PROJECTIONS: 2000-2030

	Total Households				Percent Change		
	2000	2010	2020	2030	2000-2010	2010-2020	2020-2030
Dane County	173,484	200,300	222,200	243,100	15.5	10.9	9.4
City of Madison	89,019	100,400	109,200	118,100	12.8	8.8	8.2
City as % of County	51.3	50.1	49.2	48.6			

Source: U.S. Census Bureau, Wisconsin Department of Administration, Dane County RPC, and Madison Area MPO

FIGURE 3
HOUSEHOLD GROWTH AND PROJECTIONS: 1970-2030



In 1980, one- and two-person households accounted for nearly 59% of all households in the county. By 1990, one- and two-person households accounted for 61% of all households, and by 2000, they accounted for 65% of all households (see Table 5, on the next page). About 59% of these one- and two-person households were located in the City of Madison in 1990, and by 2000, 56% were located in the City of Madison.

Since the number of smaller households has been increasing, the average household size has been decreasing. In 1980, Dane County had an average household size of 2.6 persons. By 2000, the average household size had declined to 2.4 persons. For this same time period, the average household size for the City of Madison declined from 2.4 to 2.2 (see Table 6 on the next page).

Table 6 shows that the average size of an owner-occupied household is larger than the average size of a renter-occupied household in Dane County. In 2000, the average size of an owner-occupied household was 2.6 persons, while the average size of a renter-occupied household was 2.0 persons. A continued decrease has occurred since 1980 within the owner-occupied household category, while the renter-occupied household category increased between 1980 and 1990 and then fell between 1990 and 2000.

For the City of Madison, the average size of an owner-occupied household is also larger than the average size of a renter-occupied household. In 2000, the average size of an owner-occupied household was 2.4 persons, while the average size of a renter-occupied household was 2.0 persons. Similar to the county, a continued decrease has occurred since 1980 within the owner-occupied household category, while the renter-occupied household category increased between 1980 and 1990 but remained about the same between 1990 and 2000.

TABLE 5
DISTRIBUTION OF PERSONS PER HOUSEHOLD: 1990-2000

Household Size	DANE COUNTY				CITY OF MADISON			
	No. of Households		Percent of Total		No. of Households		Percent of Total	
	1990	2000	1990	2000	1990	2000	1990	2000
One	37,640	51,014	26.4	29.4	23,900	31,441	31.2	35.3
Two	49,247	61,168	34.5	35.3	26,512	31,187	34.6	35.0
Three	23,835	26,075	16.7	15.0	11,719	12,260	15.3	13.8
Four	20,933	22,963	14.7	13.2	9,403	9,121	12.3	10.2
Five	7,909	8,578	5.5	5.0	3,464	3,275	4.5	3.7
Six	2,237	2,476	1.6	1.4	1,033	1,067	1.3	1.2
Seven+	985	1,210	0.7	0.7	642	668	0.8	0.8
Total	**142,786**	**173,484**	**100.0**	**100.00**	**76,673**	**89,019**	**100.0**	**100.0**

Source: U.S. Census Bureau and Dane County Regional Planning Commission

TABLE 6
AVERAGE HOUSEHOLD SIZE: 1980-2000

	Persons Per Household								
	Total Occupied			Owner-Occupied			Renter-Occupied		
	1980	1990	2000	1980	1990	2000	1980	1990	2000
Dane County	2.6	2.5	2.4	3.0	2.8	2.6	1.9	2.1	2.0
City of Madison	2.4	2.3	2.2	2.8	2.6	2.4	1.9	2.0	2.0

Source: U.S. Census Bureau and Dane County Planning Commission

Housing

As noted above, the number of households is anticipated to continue to increase faster than population growth during the coming decades increasing the demand for housing. This is due mainly to the maturing of the baby-boom generation who will become "empty nesters" plus the increase in the number of elderly persons.

According to the U.S. Census Bureau, there were 180,398 housing units in Dane County in April 2000 (see Table 7, on the next page). Between 1990 and 2000, the county's year round housing stock increased by 32,547 units, or 22%. In 2000, the City of Madison made up 51% of the county's housing stock, compared with 54% in 1990. Table 7 also shows the percentage share of three-plus family units increasing for both Dane County and the City of Madison from 1970 to 2000. It is also important to note that while the City of Madison has 48.8% of the county's population in 2000, it also has 66% of the three-plus family units.

The total number of housing units in Dane County is forecasted to increase 41.6% from 180,398 in 2000 to 255,500 by 2030. This percentage increase is greater than the population percentage increase of 36.0% for the same period of time (see Table 8). This situation also applies to the City of Madison where the percentage increase in forecasted housing units is greater than the percentage increase in population for the same time period.

The combined trend of smaller household sizes and potential shifts in residential types may ultimately affect the average number of trips made per household throughout the region. The average household living in a single-family detached house averages 9 to 10 vehicle trips per day while smaller households living in multi-family dwelling units average 6 to 7 vehicle trips per day. Although average total trips per household may decrease in the long run, total travel throughout Dane County is expected to increase due to the anticipated increase in the total number of households.

TABLE 7
GROWTH OF YEAR-ROUND HOUSING STOCK BY TYPE: 1970-2000

Type	Housing Units - Dane County							
	April 1970		April 1980		April 1990		April 2000	
	#	%	#	%	#	%	#	%
1-Family	54,855	59.7	72,107	57.4	85,541	57.9	105,903	58.7
2-Family	8,623	9.4	10,101	8.0	9,743	6.6	10,243	5.7
3+-Family	27,050	29.4	41,579	33.1	50,318	34.0	61,886	34.3
Mobile Home	1,398	1.5	1,824	1.5	2,247	1.5	2,366	1.3
	91,926	**100.00**	**125,611**	**100.00**	**147,851**	**100.0**	**180,398**	**100.0**
Type	**Housing Units - City of Madison**							
	April 1970		**April 1980**		**April 1990**		**April 2000**	
	#	%	#	%	#	%	#	%
1-Family	28,798	50.7	34,174	49.6	38,769	48.4	44,565	48.2
2-Family	5,485	9.6	5,611	8.1	5,605	7.0	5,739	6.2
3+-Family	21,959	38.7	28,632	41.5	34,882	43.6	41,084	44.5
Mobile Home	542	1.0	532	0.8	791	1.0	965	1.1
	56,784	**100.0**	**68,949**	**100.0**	**80,047**	**100.0**	**92,353**	**100.0**

Source: U.S. Census Bureau and Dane County Regional Planning Commission

TABLE 8
HOUSING GROWTH PROJECTIONS: 2000-2030

	Dane County				City of Madison			
	2000	2000-2030		2030	2000	2000-2030		2030
		Number	Percent			Number	Percent	
Population	426,526	153,450	36.0%	580,000	208,054	55,350	26.6%	263,400
Housing Units	180,398	75,098	41.6%	255,500	92,394	29,300	31.7%	121,700

Source: U.S. Census Bureau, Wisconsin Department of Administration, Dane County Regional Planning Commission, and Madison Area MPO.

Economic

Dane County's economy is tied on one hand to state and national economic activity, and on the other to local demographics and governmental policy. Our expectations of the future must keep large-scale trends in mind, though we have a better grasp on local population and employment trends and their effect on the economy.

Labor Force

Population trends are important because they influence the size of the labor force, which in turn indicate the potential number of work trips which an area could generate. In Dane County, the growth in working age groups means that a larger portion of the population will be in the labor force. From 1980 to 2000, Dane County's labor force increased from 178,136 to 255,838 for a net increase of 77,702 and reflects an annual growth rate of 2.2%. During this same time period, the City of Madison's labor force increased from 95,363 to 127,932 for a net increase of 32,569 and reflects an annual growth rate of 1.7% (see Table 9).

TABLE 9
CIVILIAN LABOR FORCE GROWTH: 1980-2000

	Dane County			City of Madison		
	1980	**1990**	**2000**	**1980**	**1990**	**2000**
Labor Force	178,136	214,857	255,838	95,363	112,239	127,932
Employed	169,658	208,069	246,064	91,175	108,284	121,828
Unemployed	8,478	6,788	9,774	4,188	3,955	6,104
% Unemployed	4.8	4.4	3.2	3.5	3.8	4.8

Source: U.S. Census Bureau and Madison Area MPO

Future projections indicate that from 2000 to 2030, Dane County's labor force is expected to increase 69,350 to a total of 325,100 reflecting an annual growth rate of 0.9%. This annual growth rate is less than what occurred in the last two decades. Also from 2000 to 2030, the City of Madison's labor force is expected to increase 22% but at a slightly slower annual rate (0.7%) compared to the county (see Table 10).

The city's percentage share of the county's labor force is also expected to continue past trends and fall from 50.0% in 2000 to 48.1% in 2030 (see Table 10). This is consistent with the past trends and forecast of the City of Madison's overall population growth in relationship to Dane County's population growth, reflecting a decreasing proportionate share.

TABLE 10
CIVILIAN LABOR FORCE PROJECTIONS: 2000-2030

	Labor Force			Forecast	Change		
	1980	**1990**	**2000**	**2030**	**2000-2030 Amount**	**2000-2030 Percent**	**2000-2030 Annual %**
Dane County	178,136	214,857	255,838	325,100	69,350	27	0.9
City of Madison	95,363	112,239	127,932	156,300	28,400	22	0.7
City as % of County	53.5	52.2	50.0	48.1			

Source: U.S. Census Bureau, Wisconsin Department of Administration, Dane County Regional Planning Commission, and Madison Area MPO
**Period from 2025 to 2030 is a prorated estimate.*

Employment

Employment trends are important to the transportation system because they indicate the number of work trips that an area will attract. Large shifts in employment concentrations can alter overall travel patterns that can challenge the ability of a transportation system to adjust to the shift.

Employment should continue to grow but at a slower pace than in the past. As noted in Table 11, employment in Dane County grew from 231,000 in 1990 to 285,000 in 2000, an increase of 54,000 or an average of 2.2% per year. By 2030, the county's employment is forecasted to increase to 382,600 or an average of 1.14% per year. Similarly, the City of Madison's employment grew from 166,340 to 186,550, an increase of 20,210 or an average of 1.2% per year. By 2030, the city's employment is forecasted in increase to 58,050 or an average of 1.04 % per year.

The city's percentage share of the county's employment is also expected to continue past trends and fall from 65.5% in 2000 to 64.3% in 2030 (see Table 11).

TABLE 11
EMPLOYMENT PROJECTIONS: 2000-2030
(based on place of work)

	Employment			Forecast	Change		
	1980	1990	2000	2030	2000-2030 Amount	2000-2030 Percent	2000-2030 Annual %
Dane County	170,000	231,000	285,000	382,600	97,600	34.3	1.14
City of Madison	N.A.	166,340	186,550	244,600	58,050	31.1	1.04
City as % of County	N.A.	72.0	65.5	64.3			

Source: U.S. Census Bureau, Wisconsin Department of Administration, Dane County Regional Planning Commission, and Madison Area MPO

Comparing the place of work employment forecasts in Table 11 with the growth and forecasts of the labor force shown in Table 10, the amount of growth in employment continues to outpace the growth in the labor force in Dane County and the City of Madison.

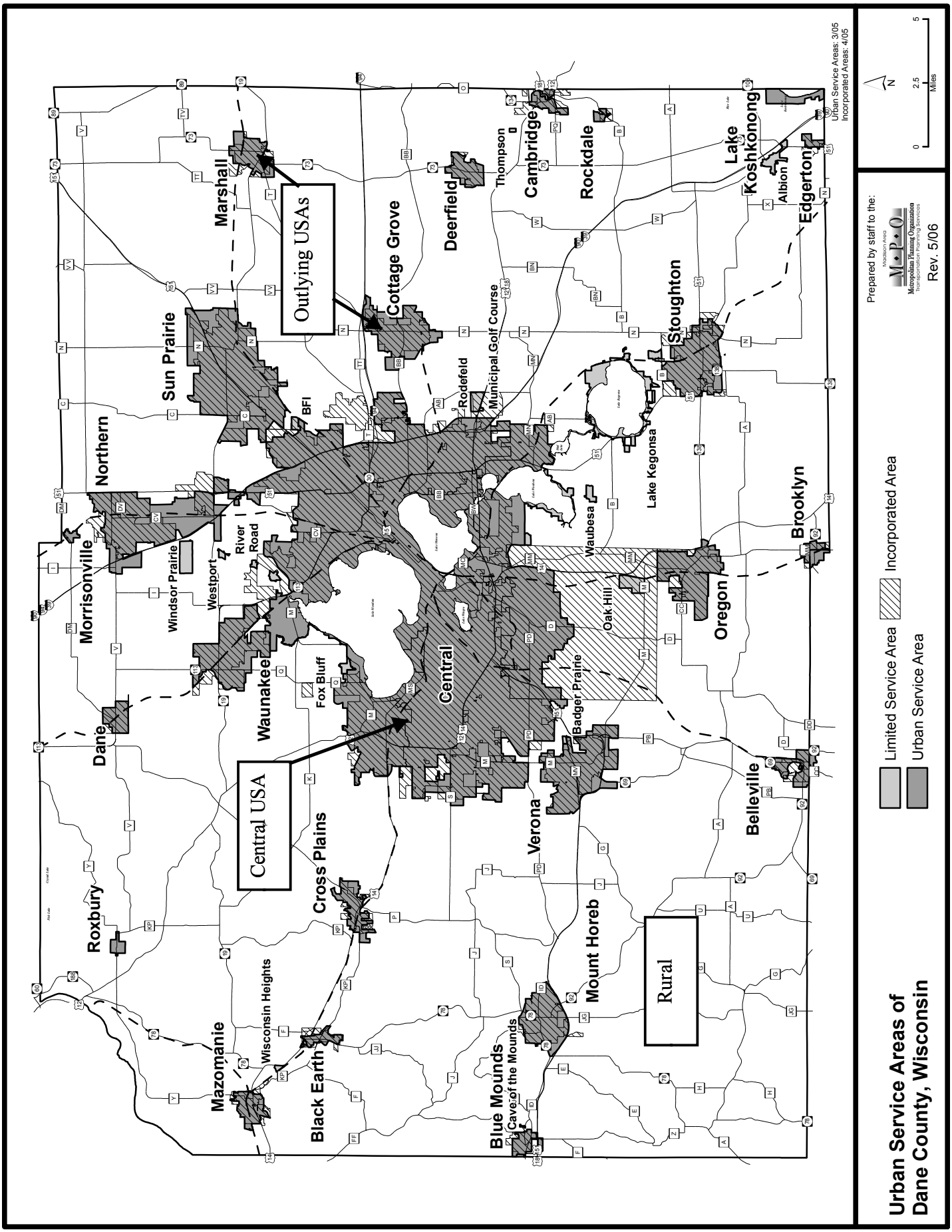
Fifty-nine percent of the county's new jobs are expected to be created in the City of Madison. Coupled with a higher growth rate in the labor force in outlying areas, this means that more people are commuting to the city for work. From 1970 to 1980, the number of people commuting into the City of Madison from outlying communities increased 16,450, from 22,450 to 38,900 per day. By 1990, commuting increased another 13,700, and by 2000 increased another 7,200 for a total of 59,800 per day. If current forecasts materialize, commuting into the City of Madison from outlying communities should continue to increase.

Land Use

An expanding economy and more people are going to require additional land for development. Redevelopment and infill will accommodate some of this development, but for the most part, new land uses will be on land currently vacant or farmed. Nationally there is no agreement on the magnitude of the land that will be needed; however, some trends have been observed that can provide some direction and areawide forecasts based upon trends, assumptions and adopted policy that have been made.

Most new Dane County development is expected to be located in the urban service areas, particularly the Central Urban Service Area (CUSA) (see Figure 4). According to the Dane County RPC, from 2000 to 2030, approximately 42,460 acres will be needed for future development. Of that total, 26,870 acres will be needed for development in the urban areas and 15,590 acres will be needed for development in the rural areas of the County. Further it is expected that of the total acreage needed, 30% (12,870 acres) of the acreage will be needed in the CUSA, 33% (14,000 acres) will be needed in the Outlying Urban Service Areas (OUSA), and 37% (15,590 acres) will be needed in the rural areas of the County.

FIGURE 4


Urban Service Areas of
Dane County, Wisconsin
Prepared by staff to the:
Madison Area
Metropolitan Planning Organization
Transportation Planning Services
Rev. 5/06
Urban Service Areas: 3/05
Incorporated Areas: 4/05
N
0
2.5
5
Miles
Limited Service Area
Incorporated Area
Urban Service Area
Outlying USAs
Central USA
Rural
Marshall
Cottage Grove
Deerfield
Thompson
Cambridge
Rockdale
Lake Koshkonong
Albion
Edgerton
Sun Prairie
Northern
BFI
Rodefeld
Municipal Golf Course
Stoughton
Lake Kegonsa
Waubesa
Brooklyn
Morrisonville
Windsor Prairie
Westport
River Road
Oak Hill
Oregon
Waunakee
Fox Bluff
Central
Badger Prairie
Dane
Verona
Belleville
Cross Plains
Roxbury
Mount Horeb
Wisconsin Heights
Mazomanie
Black Earth
Blue Mounds
Cave of the Mounds

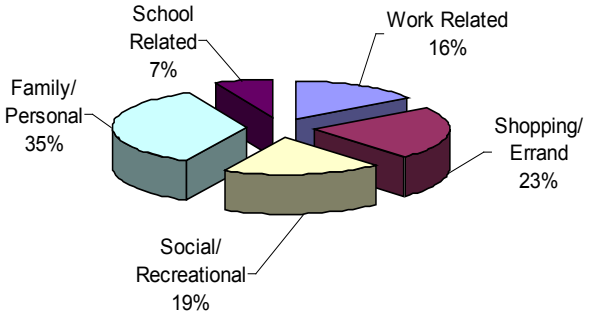
Transportation Trends, Conditions and Issues

Travel Characteristics

Why Do People Travel?

Over one-half of trips taken in Dane County are for family/personal reasons or for shopping and errands, according to a special county add-on sample of the 2001 National Household Transportation Survey (NHTS). Work trips account for just 16% of trips. Nationally, the percentage of trips that are work related has dropped from over 25% in 1969 to 16% in 2001 as a result of increased trip making for other purposes. The work trip is still very important, because it is often the longest trip of the day[1] and many non-work trips are planned around the work trip, such as dropping children at school or shopping. Commuting, whether direct trips to and from work or trip tours (including stops made on the way to/from work), contributes heavily to peak period congestion.

Trip Purpose Distribution
All Person Trips in Dane County

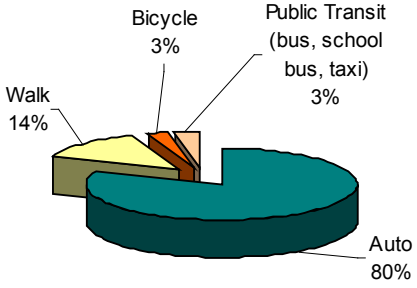


How Do People Travel?

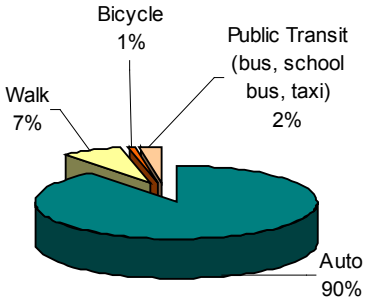
The vast majority of trips are made by personal motor vehicle, accounting for 80% of all trips in the City of Madison and 90% in the rest of Dane County. Walking, bicycling, and transit use is much higher in the City of Madison.

Mode of Travel for All Person Trips

City of Madison



Rest of Dane County



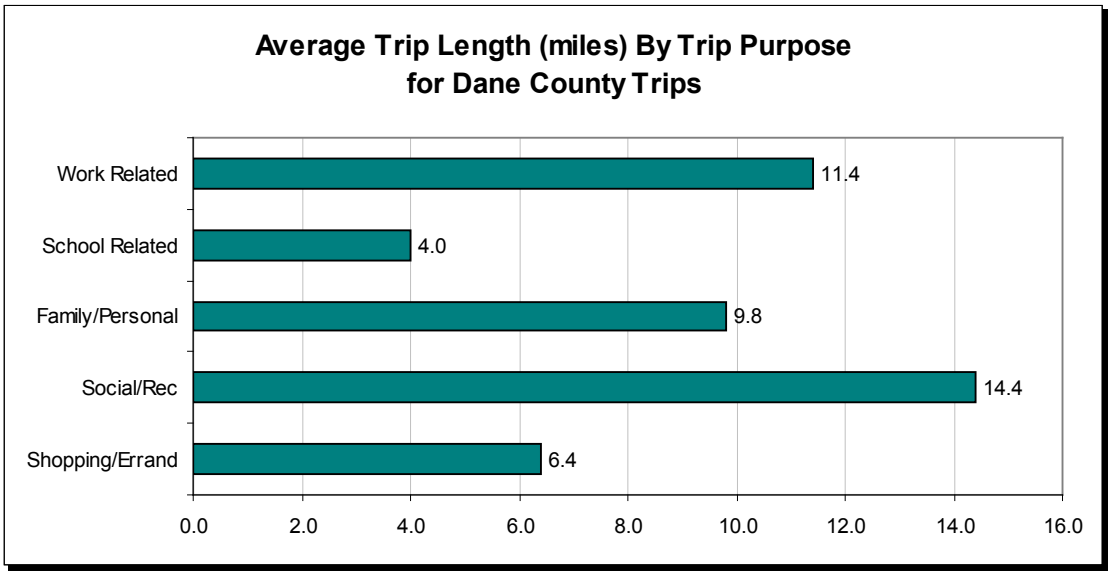
How Much and How Far Do People Travel?

It is estimated that an average daily total of 1,745,000 one-way person trips were taken in Dane County in 2001. This amounts to a little over four trips per person and 9.5 trips per household based upon the 2001 population and household estimates for the county. National data from the 2001 NHTS indicates that the average number of daily trips peaked among the working population aged 25-54 at 4.6. There was no significant difference in trip frequency based upon gender.

It is estimated that average daily travel in Dane County totaled 13,497,000 miles in 2001. This amounts to a daily average of 31 miles per person and 73 miles per household. Figure 5, on the next page, shows the average trip length varies by trip purpose. Average trip lengths for City of Madison residents were shorter, particularly for work (9.0 mi.), school (2.8 mi.), and family/personal (8.5 mi.) trips.

[1] The average social/recreational trip is longer than the average work trip, but social/recreational trips are not made on a daily basis, particularly on weekdays.

FIGURE 5



Overall Patterns

The growth of major employment and commercial retail centers on the periphery of the Madison area—many of them located outside the Beltline and Interstate system—has led to a more dispersed travel pattern with a lower percentage of trips destined for the central area. It is estimated that just 5% of the 1.7 million daily trips in the county in 2001 were destined for the Central Business District. Around 28% of daily trips were destined for central Madison, an area bounded by Whitney Way to the west, Aberg Avenue to the east, and the Beltline and City line to the south. The Near West/UW campus and Far West/Middleton areas (Super Districts 2 and 4) accounted for the largest percentage of trip making, together accounting for 29% of all trip origins and destinations. Figure 6, on the next page, illustrate the dispersed trip making pattern, showing total person trip flows from Madison's Southwest and Southeast sides to other areas in the metropolitan area and countywide.

Work Trip Commuting Patterns

Growth in employment in Dane County and the Cities of Madison, Middleton, and Monona continues to outpace growth in the resident labor force. The resident labor force from surrounding counties and communities fills this gap by commuting into the county and these cities on a daily basis. This trend, which is expected to continue into the future for the county as a whole and for Madison and Middleton, has a significant impact on regional travel patterns. The increasing time spent in travel to and from work influences the mode of travel and the propensity to make non-work related trips on the way to or from work. According to data from the 2001 National Household Transportation Survey (NHTS), more than one-half (54%) of weekday commuters stop for a non-work purpose (e.g., dropping off a passenger or shopping) during their commute.

In 2000, there were around 30,000 workers commuting into Dane County from eight adjacent counties, an 83% increase from 1990, according to U.S. Census data. Of those, around 19,500 were commuting to the Madison Area[2] (a 74% increase from 1990) and 16,000 were commuting to the City of Madison (a 63% increase from 1990). "Reverse" commuting from Dane County to adjacent counties has increased as well, but the numbers are much smaller. Approximately 9,000 Dane County workers commuted to adjacent counties, a 50% increase from 1990. Figure 7, on page 28, shows 2000 work trip commuting to and from Dane County.

In 2000, there were almost 60,000 workers commuting to the City of Madison from other Dane County communities in addition to the 16,000 commuting from eight adjacent counties. This represented a 14% increase from 1990, which continued to put increasing travel demands on the arterial roadway system in the Madison area. Figure 8 on page 29 shows the increase in work trip commuting to the City of Madison from cities, villages, and towns in Dane County from 1970 to 2000.

[2]Including the Cities of Madison, Middleton, Fitchburg, and Monona and the Village of McFarland.

FIGURE 6

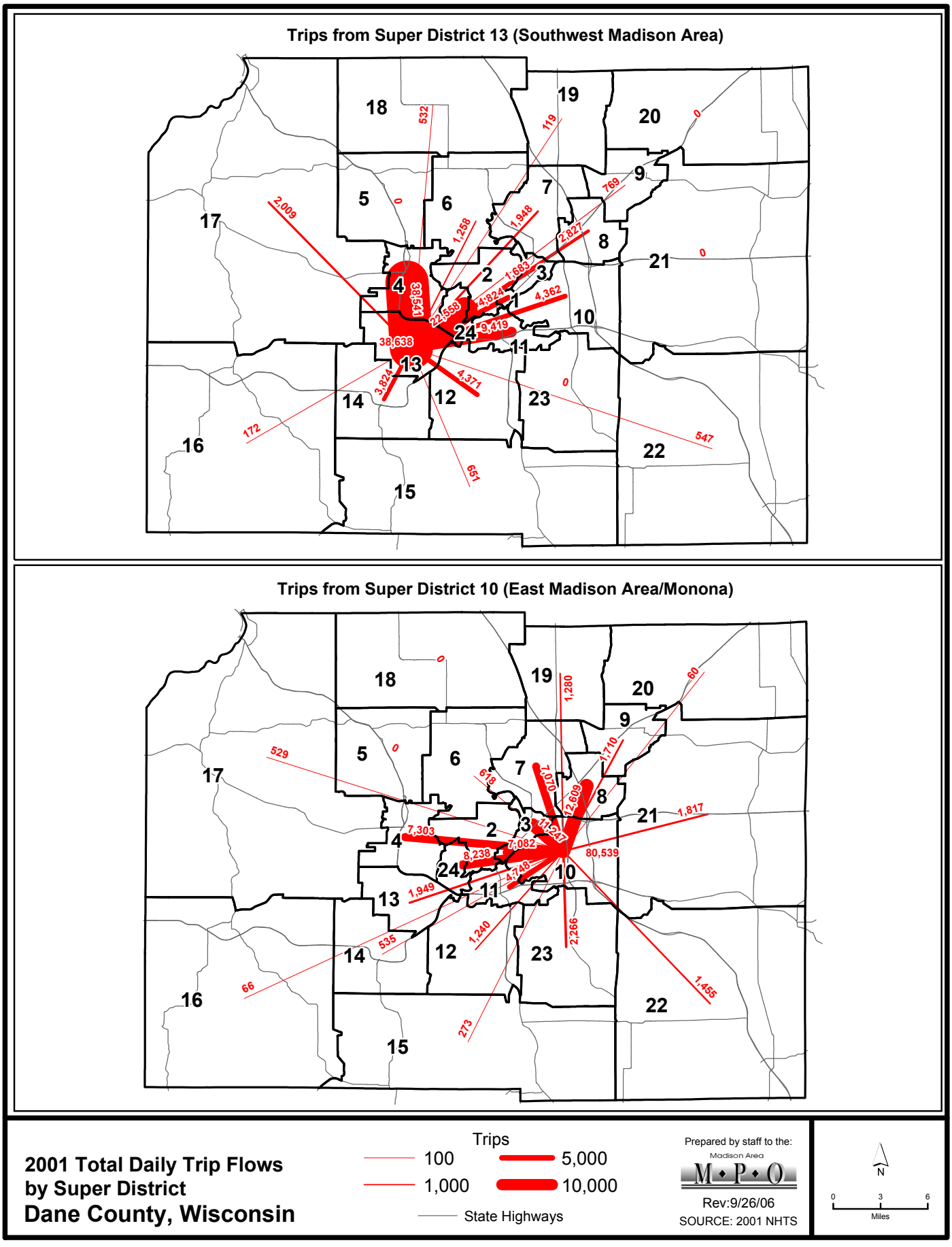

Trips from Super District 13 (Southwest Madison Area)
18
19
20
5
6
7
9
17
8
21
2
3
4
1
10
24
11
13
14
12
23
16
22
15
532
119
0
2,009
0
769
1,258
1,948
2,827
0
1,683
38,638
4,362
22,558
14,824
19,419
38,638
3,824
4,371
0
172
547
651
Trips from Super District 10 (East Madison Area/Monona)
18
19
20
9
5
6
7
17
8
21
2
3
4
24
10
11
13
14
12
23
16
22
15
0
1,280
60
529
0
1,710
7,070
12,609
1,817
7,303
11,241
7,082
80,539
8,238
4,748
1,949
1,240
2,266
535
66
1,455
273
2001 Total Daily Trip Flows
by Super District
Dane County, Wisconsin
Trips
100
5,000
1,000
10,000
State Highways
Prepared by staff to the:
Madison Area
M • P • O
Rev:9/26/06
SOURCE: 2001 NHTS
N
0
3
6
Miles

FIGURE 7

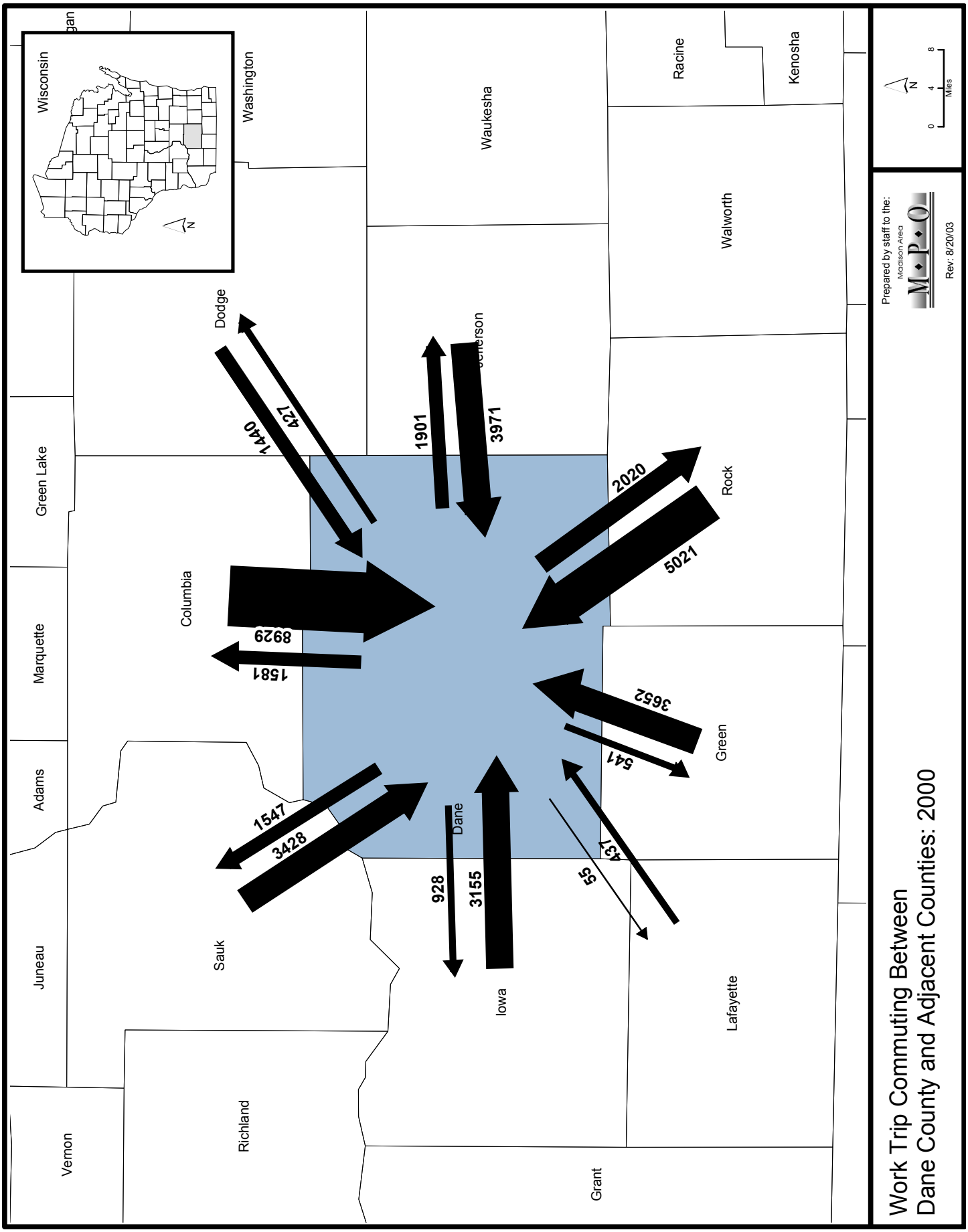
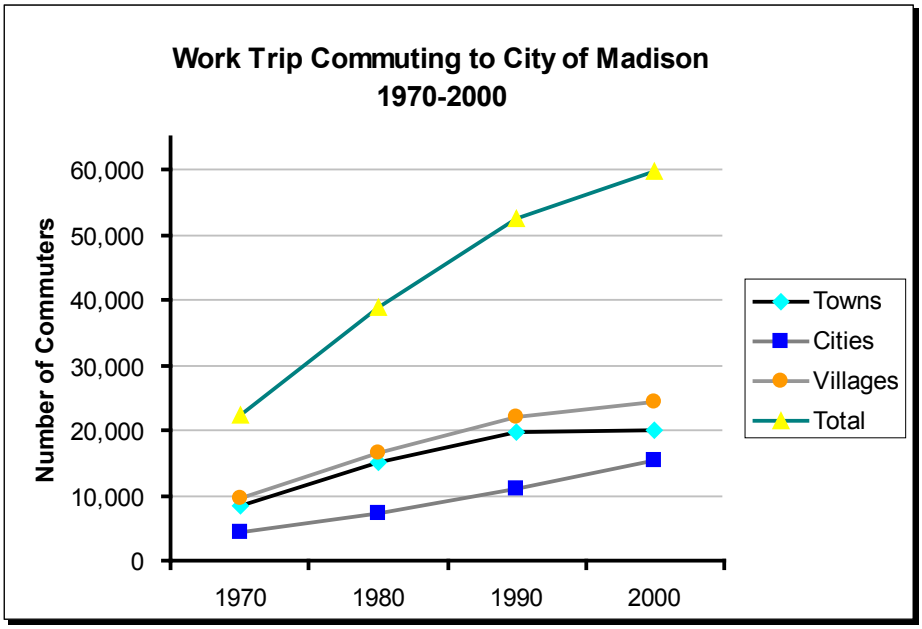

Work Trip Commuting Between
Dane County and Adjacent Counties: 2000
Prepared by staff to the:
Madison Area
M•P•O
Rev: 8/20/03
0 4 8
Miles
N
Wisconsin
Washington
Waukesha
Racine
Kenosha
Walworth
Jefferson
Dodge
Green Lake
Columbia
Marquette
Adams
Juneau
Sauk
Richland
Vernon
Dane
Iowa
Grant
Lafayette
Green
Rock
1440
421
1901
3971
2020
5021
8929
1581
3652
541
1547
3428
928
3155
55
431

FIGURE 8



Figures 9 and 10, on pages 30 and 31, show the percentage of workers in these communities commuting to the City of Madison in 1970 and 2000.

"Reverse commuting" from the City of Madison has also increased, but again the numbers are much smaller. Around 21,200 City of Madison residents commuted to other Dane County communities for work in 2000, a 62% increase from the 13,100 in 1990. Another 2,600 Madison residents commuted to work in adjacent counties, compared to 1,500 in 1990.

The number of residents of Dane County cities and villages who worked in the place they resided decreased from 62% in 1990 to 56% in 2000. This contributed to an increase in mean travel time to work for Dane County residents from 18.1 minutes in 1990 to 19.9 minutes in 2000.

Well over one-half (57%) of all Dane County commuters depart to work between 6:30 a.m. and 8:30 a.m., greatly contributing to the peak period congestion during this time. Increasing traffic congestion, particularly on the Beltline, is starting to spread out the peak period, but not as significantly as seen in larger metropolitan areas. While this peak spreading has not yet become apparent in the data for all trips countywide, it is expected to occur more in the future, particularly for trips using the Beltline and other congested roadways. Figure 11 shows departure time to work for all Dane County commuters in 1990 and 2000. There was little change over this time period.

FIGURE 11

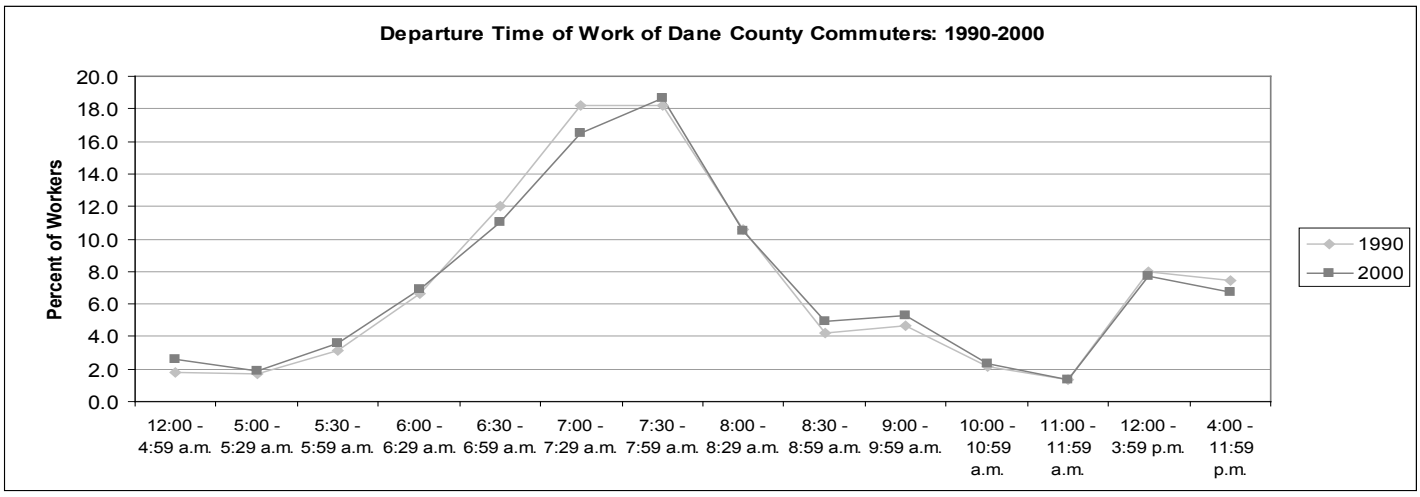


FIGURE 9

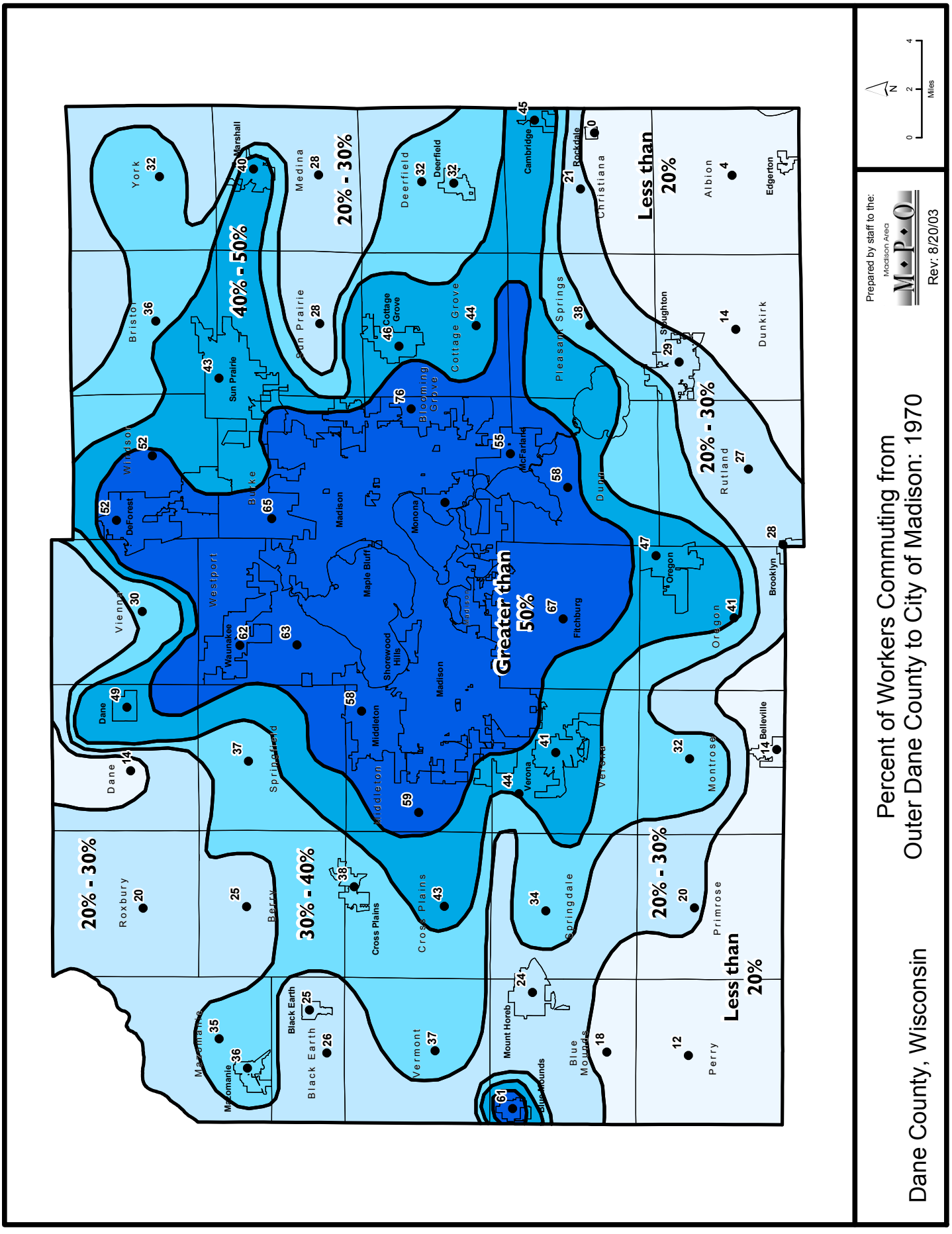
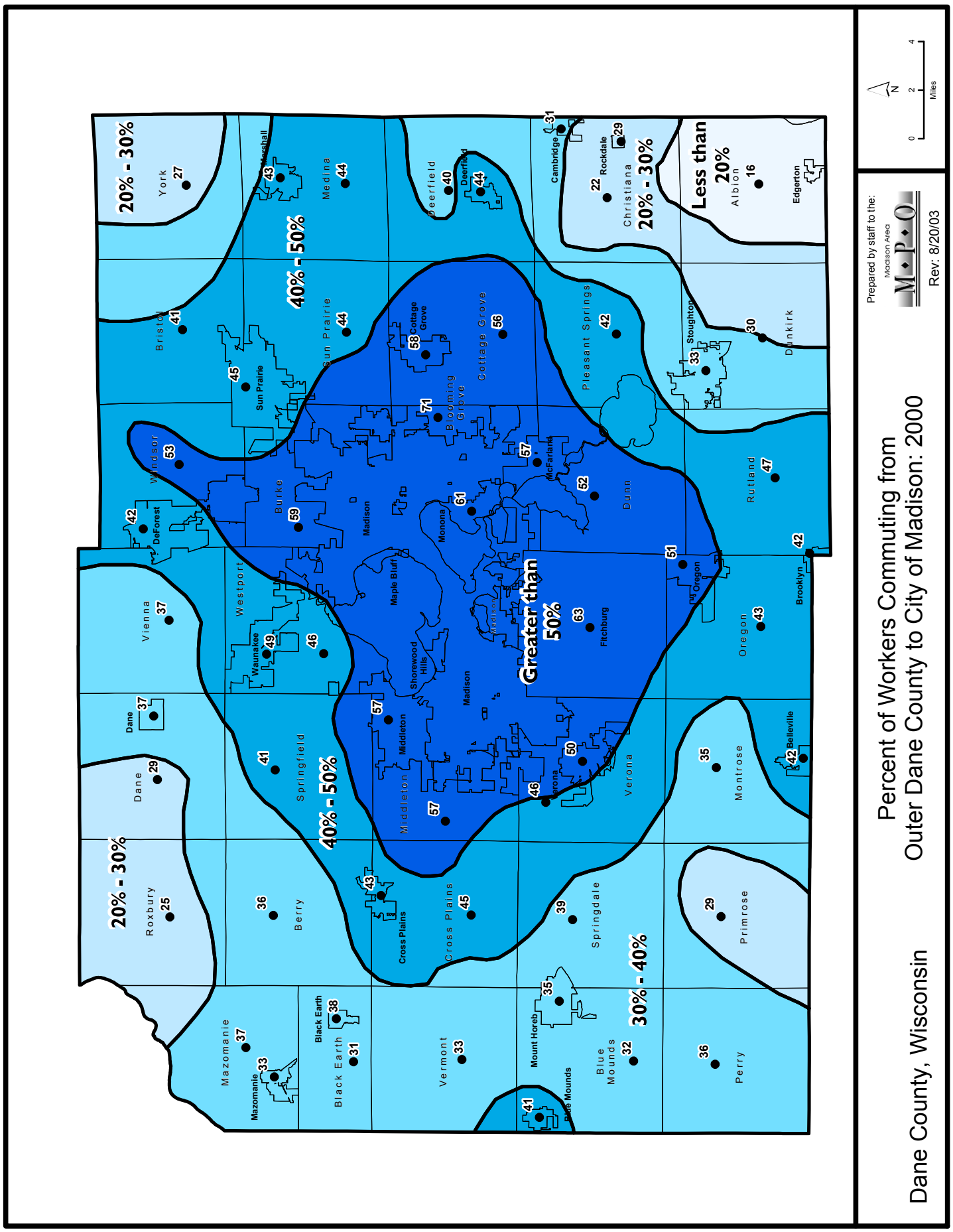

Percent of Workers Commuting from
Outer Dane County to City of Madison: 1970
Dane County, Wisconsin
Prepared by staff to the:
Madison Area
M•P•O
Rev: 8/20/03
N
0
2
4
Miles
Greater than 50%
40% - 50%
30% - 40%
20% - 30%
Less than 20%
Madison
Middleton
Verona
Fitchburg
Monona
Shorewood Hills
Maple Bluff
Oregon
Brooklyn
Belleville
Sun Prairie
Deerfield
Cambridge
Stoughton
Edgerton
Cross Plains
Mount Horeb
Blue Mounds
Black Earth
Springdale
Primrose
Perry
Vermont
Berry
Springfield
Roxbury
Dane
Vienna
Westport
Windsor
Burke
Bristol
York
Marshall
Medina
Cottage Grove
Blooming Grove
Deerfield
Pleasant Springs
Christiana
Dunn
Rutland
Albion
Dunkirk
Montrose
McFarland
Waunakee
DeForest
Rockdale

FIGURE 10


Percent of Workers Commuting from
Outer Dane County to City of Madison: 2000
Dane County, Wisconsin
Prepared by staff to the:
Madison Area
M • P • O
Rev: 8/20/03
N
0
2
4
Miles
Greater than 50%
40% - 50%
30% - 40%
20% - 30%
Less than 20%
Madison
Middleton
Cross Plains
Springdale
Verona
Fitchburg
Oregon
Brooklyn
Stoughton
Cottage Grove
Sun Prairie
Deerfield
Cambridge
Rockdale
Edgerton
Dunkirk
Pleasant Springs
Dunn
Rutland
Montrose
Primrose
Perry
Blue Mounds
Vermont
Mount Horeb
Black Earth
Mazomanie
Berry
Roxbury
Springfield
Westport
Vienna
Windsor
Burke
Bristol
York
Medina
Deerfield
Christiana
Albion
Maple Bluff
Shorewood Hills
Monona
Blooming Grove
McFarland
Waunakee
DeForest
Belleville
Dane

The percentage of workers commuting to work in Dane County who drove alone has continued to increase, while the percentage of workers using alternative means of transportation has decreased. From 1990 to 2000, the percentage share of drive alone work trips countywide increased from 68% to 75%. The percentage share of drive alone trips work trips by City of Madison residents rose from 60% to 65%. The overall number of commuters taking transit and bicycling to work increased, but the percentage share of trips still declined. The same trend of increased single-occupant vehicle commuting was true for those who worked in the downtown and UW-Madison campus areas. However, the percentages of those using alternative means of transportation were much higher due to the concentration of employment centers and UW-Madison campus area, parking cost, and excellent bus service. In addition, the percentage of those using transit and bicycling actually increased to 11.2% and 4.8%, respectively.

Table 12 below shows the means of transportation to work for all Dane County workers and for those working in the downtown and UW-Madison campus areas in 1990 and 2000.

TABLE 12
MODE OF TRANSPORTATION FOR WORK: 1990 & 2000

Trips within/to Dane County				
Mode	1990		2000	
	Number	Percent	Number	Percent
Drive Alone	147,642	68.4	198,841	74.7
Carpool	29,115	13.5	28,062	10.5
Transit	9,445	4.4	10,010	3.8
Bicycle	3,966	1.8	4,148	1.6
Walk	17,190	8.0	15,071	5.7
Other	1,280	0.6	1,120	0.4
Work at Home	7,339	3.4	9,194	3.5
Total	215,977	100.0	266,446	100.0
Trips to the Downtown and UW-Madison Campus Areas				
Mode	1990		2000	
	Number	Percent	Number	Percent
Drive Alone	24,076	47.5	30,625	53.7
Carpool	8,613	17.0	7,552	13.2
Transit	5,265	10.4	6,404	11.2
Bicycle	2,236	4.4	2,767	4.8
Walk	9,725	19.2	9,053	15.9
Other	371	0.7	283	0.5
Work at Home	431	0.8	383	0.7
Total	50,717	100.0	57,067	100.0

Source: Census Transportation Planning Package

Federal Functional Classification System of the Regional Roadways

The Federal-Aid Highway Act of 1973, as amended, requires the use of functional highway classification to update and modify the Federal-aid highway system. The Federal Functional Classification (FFC) system groups roadways into classes according to their function and the type of service they provide. Functional classification also provides a basis for receipt of Federal transportation funding. All roadways classified as a rural major collector or above are eligible for Federal funding.

The FFC system divides roadways into two groups—urban and rural—based upon whether the roadway is located within the urban area boundary of a metropolitan area. The urban area boundary is based upon the urbanized area boundary defined by the U.S. Census Bureau. It is based upon total population and population density. The Madison Urban Area was adjusted to also include major employment centers. The reason for distinguishing urban and rural areas in the roadway functional classification system is that they have fundamentally different characteristics in terms of density and types of land use, density of roadway networks, and nature of travel patterns.

TABLE 13
URBAN FEDERAL FUNCTIONAL CLASSIFICATION (FFC) OF ROADWAYS

FFC	FUNCTION	LAND USE	TRAFFIC DEMANDS	FACILITY TYPE
FREEWAYS	Moving inter- and intra-regional traffic, particularly long trips in the high traffic volume corridors.	Providing access to major industrial and commercial developments.	Normally in excess of 20,000 vehicles per day and often over 50,000 vehicles per day.	High speed, divided highway with full control of access and grade separated interchanges.
EXPRESSWAYS	Serve longer trip desires and high traffic volume corridors where not served by freeways.	Serve major centers of activity, with service to abutting land uses secondary to the provision of travel service.	Generally in the range of 15,000 to 35,000 vehicles per day.	Divided highway with partial access control, some grade separated interchanges access only with surface street systems, and no access to abutting land uses.
PRINCIPAL ARTERIALS	Serve longer trip desires and high traffic volume corridors, where not served by freeways.	Serve major centers of activity, with service to abutting land uses secondary to the provision of travel service.	Generally in the range of 15,000 to 35,000 vehicles per day.	Typically, divided street with major access points at intersections with the surface street system. Some limited direct access permitted to abutting land uses.
MINOR ARTERIALS	Interconnect with and augment the principal arterial system and provide service to trips of moderate length.	Distributes traffic to geographic areas smaller than those served by the higher system, with more emphasis on service to abutting land uses.	Generally in the range of 5,000 to 15,000 vehicles per day.	Number of lanes and type of median directly related to traffic volumes and abutting land uses.
COLLECTORS	Connect local streets to the arterial street systems.	Serve residential neighborhoods with direct access to abutting land uses.	Generally in the range of 2,000 to 5,000 vehicles per day, with some roadways 10,000 vehicles per day or more.	Typically, two-lane streets.

Source: FHWA

The FFC system classifies roadways into four major systems: principal arterials, minor arterials, collectors, and local roadways. Principal arterials are further subdivided into the Interstate system, other freeway, and other (generally expressways). Rural collectors are subdivided into major and minor. Table 13, on the previous page, describes the function, land uses served, traffic demands, and facility types of the classes of roadways. Figure 12, on page 35, shows the functionally classified roadway system in Dane County as approved in 2004.

Traffic Growth and Congestion

The population, employment, development, and travel trends discussed above have led to increasing traffic volumes and congestion levels on regional roadways. The increase in traffic volumes has been especially large on the Beltline and Interstate route system and on radial arterials beyond this system that lead into the Madison area such as USH 151, Verona Road (USH 18/151), USH 12/18, USH 14, and Mineral Point Road (CTH S). Increases in traffic volumes on these roadways were fastest during the 1980s, but have continued to grow since then. The circumferential Beltline and Interstate system has helped to alleviate traffic growth on cross-Isthmus arterials such as Johnson/Gorham Street, Atwood/Williamson Street, Monroe Street, and University Avenue. However, these roadways remain congested during peak periods. This congestion has also limited the amount of traffic growth on these roadways during peak periods.

Figure 13, on page 36, shows the growth in average daily traffic volume from 1990 to 2000 on the arterial roadway system in the Madison area. Figure 14, on page 37, shows the 2000 congestion levels on the arterial and collector roadway system. "Congested" levels represent Level of Service (LOS) D and "very congested" represents LOS E or worse. There were 95 miles of congested roadways and 30 miles of very congested roadways in 2000. Some congested corridors shown in Figure 14 have been addressed since 2000 such as USH 12 between the City of Middleton and Sauk City and McKee Road (CTH PD) between Nesbitt and Maple Grove Roads.

Transportation System Management and Operations

The existing roadway system represents a major investment of resources. While investments in new and expanded roadways are needed to meet existing and future capacity needs, it is critical that the best use be made of roadway facilities already in place. Lower cost investments in existing roadway facilities, which can be implemented in the near-term, will help reduce or delay the need for higher cost capacity expansions in the future. For many roadways in already developed areas, expansion of capacity is not always feasible due to right of way constraints and/or environmental and neighborhood impacts.

Transportation System Management (TSM) measures seek to improve the operational efficiency of the arterial street and roadway network through access management, traffic engineering techniques (e.g., adding left turn lanes/ signals, improved signal timing), information dissemination, and incident and work zone management. Some of these strategies now include the use of advanced transportation technologies (e.g., real-time traffic information, ramp metering), referred to as Intelligent Transportation Systems (ITS).

<u>Arterial Street Traffic Management</u>

The objectives of arterial street traffic management are to reduce congestion, improve safety, and support other agencies during emergencies. TSM measures that seek to improve the operation and efficiency of the arterial street network are discussed below.

FIGURE 12

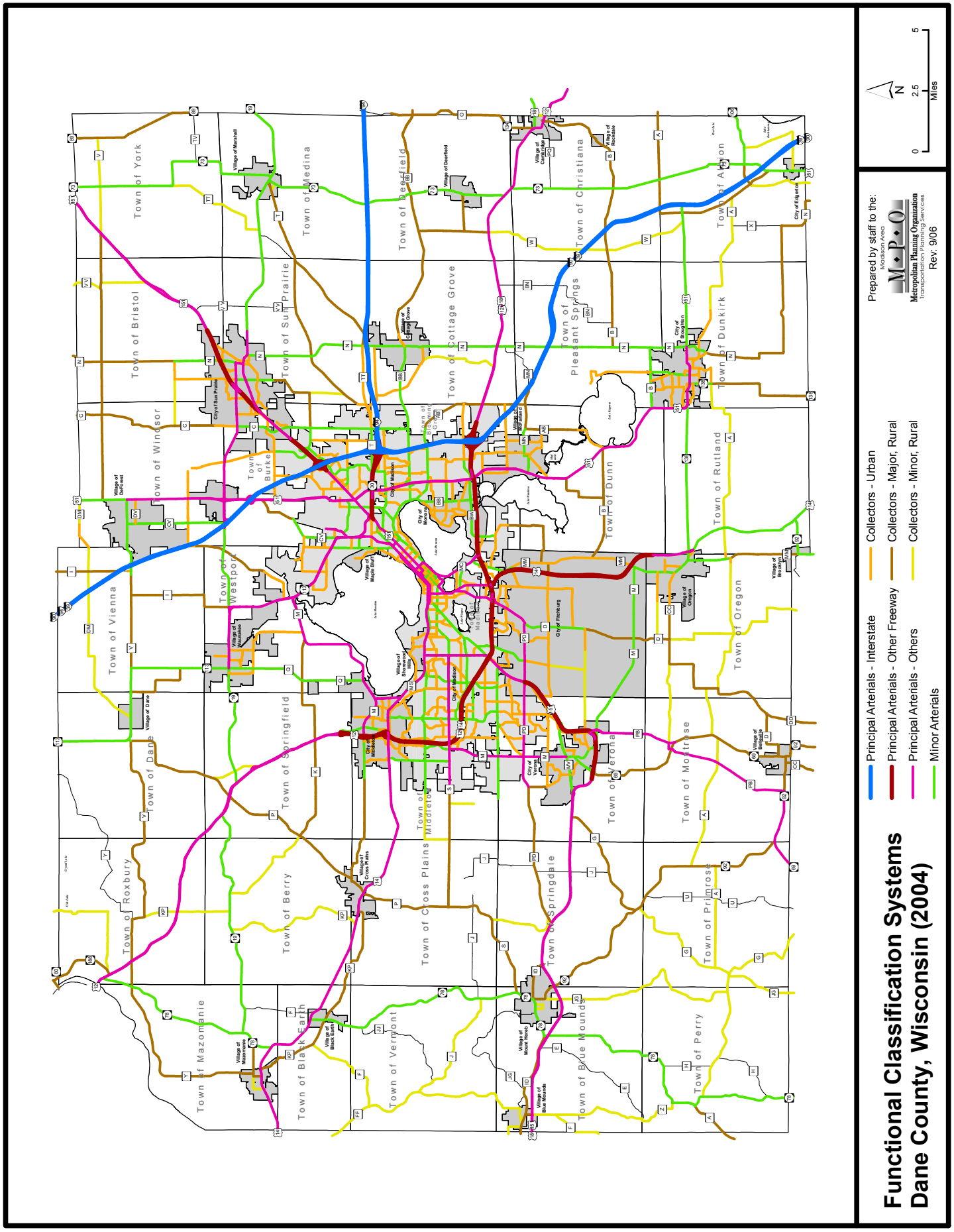

Functional Classification Systems
Dane County, Wisconsin (2004)
Principal Arterials - Interstate
Principal Arterials - Other Freeway
Principal Arterials - Others
Minor Arterials
Collectors - Urban
Collectors - Major, Rural
Collectors - Minor, Rural
N
0
2.5
5
Miles
Prepared by staff to the:
Madison Area
Metropolitan Planning Organization
Transportation Planning Services
Rev: 9/06
Town of York
Town of Medina
Town of Deerfield
Town of Christiana
Town of Albion
Town of Bristol
Town of Sun Prairie
Town of Cottage Grove
Town of Pleasant Springs
Town of Dunkirk
Town of Windsor
Town of Burke
Town of Dunn
Town of Rutland
Town of Vienna
Town of Westport
Town of Oregon
Town of Dane
Town of Springfield
Town of Verona
Town of Montrose
Town of Roxbury
Town of Berry
Town of Cross Plains
Town of Middleton
Town of Springdale
Town of Primrose
Town of Mazomanie
Town of Black Earth
Town of Vermont
Town of Blue Mounds
Town of Perry

FIGURE 13

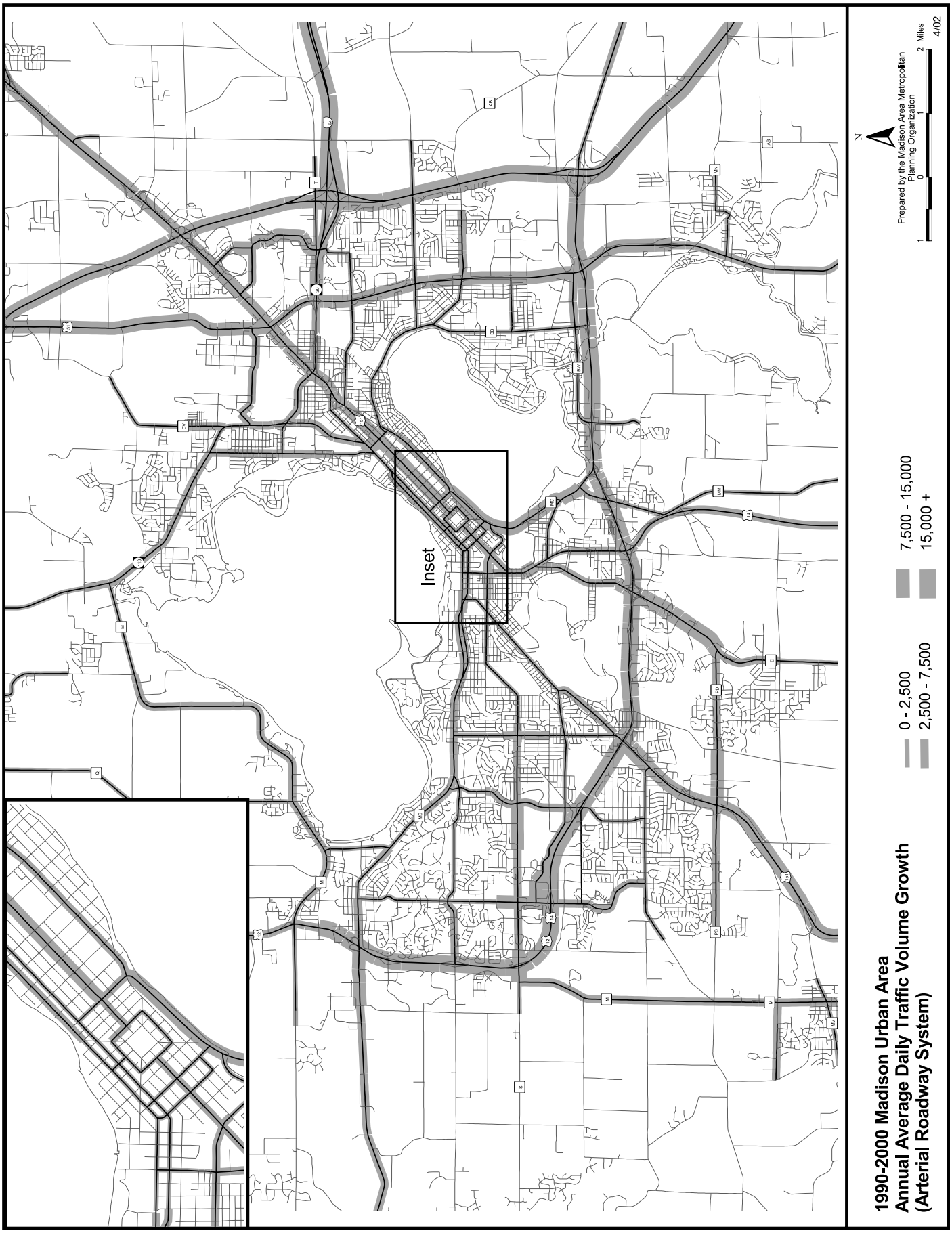
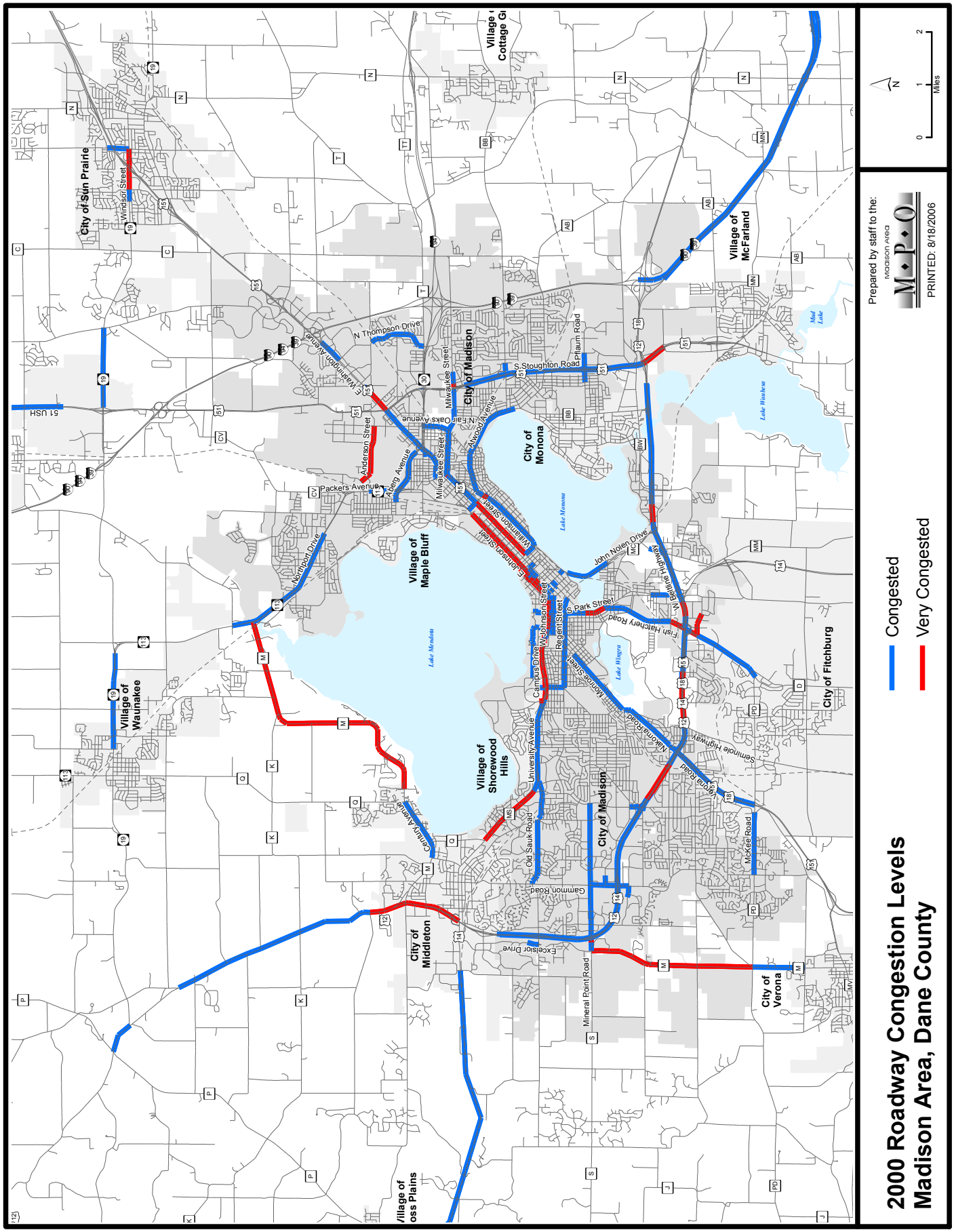

Inset
1990-2000 Madison Urban Area
Annual Average Daily Traffic Volume Growth
(Arterial Roadway System)
0 - 2,500
2,500 - 7,500
7,500 - 15,000
15,000 +
N
Prepared by the Madison Area Metropolitan Planning Organization
0
1
2 Miles
4/02

FIGURE 14


2000 Roadway Congestion Levels
Madison Area, Dane County
Congested
Very Congested
Prepared by staff to the:
Madison Area
M•P•O
PRINTED: 8/18/2006
0
1
2
Miles
N
City of Sun Prairie
Village of McFarland
City of Madison
City of Monona
Village of Maple Bluff
Village of Shorewood Hills
Village of Waunakee
City of Fitchburg
City of Middleton
City of Verona
Lake Mendota
Lake Monona
Lake Wingra
Lake Waubesa
Mud Lake
Winsor Street
N Thompson Drive
Milwaukee Street
S Stoughton Road
Pflaum Road
Anderson Street
Packers Avenue
Northport Drive
Aberg Avenue
Oregon Avenue
John Nolen Drive
Seminole Highway
Fish Hatchery Road
S Park Street
W Johnson Street
E Johnson Street
Regent Street
Campus Drive
University Avenue
Century Avenue
Old Sauk Road
Gammon Road
Mineral Point Road
Excelsior Drive
McKee Road
Verona Road
Nesbitt Road
51 USH

Access Management

Access management is the proactive management of vehicular access points to land parcels adjacent to the roadway in order to promote the efficient and safe use of the roadway. Techniques to control access include: access street or interchange spacing; limiting or prohibiting driveway access; use of dedicated turning lanes, or in the case of freeways, auxiliary lanes; median treatments (e.g., raised medians, two-way, left-turn lanes), and right-of-way management for future roadways or roadway improvements.

Cities and villages have the authority to restrict roadway access and also control access through plat review and approval. Standards for access control are also typically addressed as part of comprehensive, neighborhood, or corridor plans. Dane County controls access on county roadways in unincorporated areas. All of the county roadways in the Madison planning area are designated as access-controlled roadways with special restrictions on new access points. WisDOT controls access on all state roadways, and has designated nearly all state roadways in the planning area as access controlled, including most recently STH 138.

WisDOT conducts access studies to develop long-term access plans for state roadway corridors, which allows both WisDOT and local communities to plan for future land use and transportation needs. WisDOT Southwest District is currently conducting access studies for USH 12/18 between the Interstate and CTH N and the STH 19/STH 113 corridor between the Village of Waunakee and the City of Sun Prairie.

It is much simpler to control access at the time development occurs rather than retrofit an already developed roadway corridor. However, improvements in access control can still be made as part of redevelopment and street reconstruction projects. As part of the planned reconstruction of Monona Drive, improvements in access control will be made by eliminating and/or consolidating driveway access points and adding a median for the segment from Broadway to Dean Avenue.

Intersection Improvements, Traffic Signal Coordination, and Curb-Lane Parking Restrictions

Most of the delay on urban arterial streets occurs at intersections. Congestion and delay at intersections can be reduced through: (a) geometric improvements such as adding or lengthening turn lanes; and (b) traffic control improvements such as two- or four-way stop control, roundabouts, or signalization. For arterial streets with traffic signals spaced ½ mile or less apart, improvements in signal timing can also reduce congestion and delays. The critical peak period capacity of arterial street corridors can be increased through curb lane parking restrictions during peak periods. Regent Street, Monroe Street, Williamson Street, and Atwood Avenue are among those arterial streets with peak period curb lane parking restrictions in the City of Madison. When implementing these strategies, the impacts on the safety and convenience of pedestrians, bicyclists, and transit users must be considered.

Traffic signal coordination is the process of making traffic signals work together rather than independently along a corridor. Coordination of signals can greatly increase the operational efficiency of each intersection in the roadway system. Traffic signal systems, consisting of system hardware, software, and communication linkages, are the most effective means of coordinating signals. Systems allow many routine control functions to be accomplished automatically and in a synchronized manner, and provide signal staff with the ability to monitor signal operations from remote locations, detect control problems, and adjust operating functions and timing parameters. Systems provide more reliable operations and reduce the time needed to correct malfunctions when they occur.

Most of the signals in the Madison area are part of a coordinated traffic signal system that is operated and maintained by the City of Madison Traffic Engineering Division. The City has on ongoing program to evaluate and make adjustments to the timing of the traffic signals. Dane County and local jurisdictions reimburse the City for work on signals on county roadways and those located outside the City. The signals are programmed to maintain optimum traffic flow while also meeting other goals such as providing sufficient time for pedestrians to cross the street and to clear cross traffic on side

streets as well as allowing for left-turning traffic. The timing of the signals is adjusted for different days of the week, times of the year, and for special events (e.g., football Saturdays).

The only traffic signals not maintained by the City of Madison Traffic Engineering Division are those along Stoughton Road (USH 51) and Verona Road (USH 18/151), the Beltline interchange signals in Monona at South Towne Drive and Monona Drive, and the signals in the City of Middleton. WisDOT is currently in the process of trying to better coordinate the signals on Verona Road and Stoughton Road. The City of Middleton has coordinated the signals on Greenway Boulevard and Century Avenue, but not those on University Avenue.

Planned Special Events Management
In addition to making adjustments to the timing of the traffic signals, the City of Madison Traffic Engineering Division works with UW-Madison, local law and traffic enforcement agencies, and Metro Transit to employ a number of other traffic management strategies for special events. These include: (a) informing the public of available and recommended travel options such as public transit and alternative routes; (b) use of Metro shuttle bus service from remote parking lots; (c) providing extra law enforcement personnel to assist travelers, direct traffic, and clear disabled vehicles; and (d) other special traffic control measures such as detouring traffic to special routes.

Emergency Vehicle Signal Pre-emption
Emergency vehicle signal pre-emption allows emergency vehicles to intervene in the normal operation of traffic signals through wireless technologies. The regular cycle of the traffic signal is interrupted to either change the traffic signal to the green phase or to hold the green phase, allowing the emergency vehicle to pass through the intersection without delay. The City of Madison and other area communities are in the process of implementing traffic signal pre-emption. Most of the Madison area signals are now equipped with emergency vehicle pre-emption capability.

Emergency Management
As a result of the disaster along the Gulf Coast of the United States from hurricane Katrina, the Governor of Wisconsin mandated plans be developed for the complete evacuation of the twelve largest cities in the State. Therefore, the City of Madison is currently in the process of developing an emergency evacuation plan with assistance from Wisconsin Emergency Management and Dane County Emergency Management. MPO staff is providing assistance to this effort in the form of data necessary to complete the project.

Freeway Management and Operations
The regional freeway system, including the Interstate and Beltline, provides the backbone of the regional roadway system and the highest level of service when traffic flows smoothly and safely. Freeway traffic management involves the implementation of strategies, policies, and technologies designed to improve the operation and management of the regional freeway system. The objectives of freeway management programs are to minimize congestion (and its side effects), improve safety, enhance overall mobility and goods movement, improve reliability and predictability, and provide support to other agencies during emergencies. Freeway traffic management measures are discussed below.

Infrastructure Improvements
These include lower cost (relative to capacity expansion) improvements such as adding auxiliary lanes and widening and/or lengthening ramps to eliminate bottlenecks. They can also include improved signing, pavement markings, and lighting. Auxiliary lanes were most recently added on the Beltline between the Verona Road and Whitney Way interchanges.

Operational Control

This includes most commonly ramp management, which involves use of ramp meters (traffic signals on entrance ramps) to control the amount of traffic entering the freeway to maintain or enhance operational efficiency. Ramp meters regulate traffic entering onto the freeway, preventing platoons of merging vehicles, which causes traffic flow on the freeway to break down. By allowing only one or two vehicles to enter the freeway at a time, traffic flow is maximized, speeds are more uniform, and congestion-related crashes are reduced. Typically, ramp meters include a bypass lane for high occupancy vehicles (HOVs), which provides an incentive for carpooling and transit. Metering systems vary from fixed-time operation to more advanced systems with computerized control based upon real-time traffic conditions provided by traffic detectors that measure the speed, volume, and density of traffic.

Ramp meters with a HOV bypass lane were installed on the Beltline in 2001 at three on-ramp locations (Whitney Way eastbound, Fish Hatchery Rd. westbound, Park St. westbound) as part of WisDOT's Southwest Wisconsin Intelligent Transportation Systems (ITS) Program. The timing of the meters is adjusted based on Beltline traffic data provided by detectors imbedded in the roadway. A study of the benefits of the Beltline ramp meters on nine freeway links near where they are located was recently completed.[3] The study found the ramp meters resulted in a 3-8% average travel speed improvement and 1.5-3.0% travel volume improvement compared to conditions without them. A before-and-after study found a 50% reduction in crashes. An additional ramp meter is being installed for the Todd Drive westbound on-ramp.

Information Dissemination

This includes measures to provide real-time information on traffic congestion and construction activities to travelers both prior to trip departure (e.g., via the Internet and telephone) and when en-route (e.g., via changeable message signs, media broadcasts, highway advisory radio, and mobile communication devices). The information may be used to choose a different route or travel time or to adjust driving behavior in response to unsafe conditions.

Real-time information is provided by traffic detectors, which can be imbedded in the pavement or consist of closed-circuit television cameras. Both types of detectors have been installed on the Beltline. Information from the detectors along the Beltline is shared with public safety agencies and the media. Sharing the data is planned to be expanded to other agencies in the future. Traffic detectors are also being installed as part of the East Washington Avenue reconstruction project. Changeable message signs have also been used as part of that project both on East Washington Avenue and on STH 30. The information from the detectors is tied into WisDOT's Traffic Management Center in Milwaukee, which is staffed at all times and can be contacted via a toll-free telephone number. The State Patrol and the Dane County 911 Center also have access to the information. The information is also provided to the media. WisDOT maintains information on its Web site on planned construction activities. Real-time information on traffic congestion on the Madison area freeway system is not yet available on WisDOT's Web site as it is for the Milwaukee freeway system. WisDOT's Web site includes views from the closed circuit television camera network on the Milwaukee freeway system, colored-coded maps depicting the level of freeway traffic congestion, and current travel time and delay information for various freeway segments.

Real-time information dissemination allows travelers to avoid congested areas by selecting different routes, times, or even destinations, or at least take the delays into consideration when making travel plans. Even in those cases where travelers cannot avoid the congestion, the knowledge of traffic conditions reduces stress and limits risk taking behavior, thus producing better travel conditions.

[3] Evaluation of Ramp Metering on Madison Beltline – Final Report, prepared by University of Wisconsin –Madison for WisDOT, WisDOT Project ID #1206-00-17 (January 13, 2005).

Traffic Incident Management

Traffic incident management broadly describes enhanced traffic control strategies and emergency management to minimize traffic disruption and safety impacts attributable to disabled vehicles, debris, traffic crashes, and planned roadway activities. Research has shown that over 50% of total traffic delay in the largest cities in the U.S. is attributable to traffic incidents. In smaller metropolitan areas such as Madison, the percentage is probably even higher. The goal of incident management is to prevent incidents from reducing traffic capacity, and if they do, to restore capacity as quickly as possible. This decreases the occurrence and severity of congestion and the possibility of secondary crashes.

Incident management strategies include:

(1) Use of freeway safety patrols to search for and respond to incidents;
(2) Technologies and communications systems for rapid detection of an incident and appropriate inter-agency response to it (e.g., cameras and other vehicle detectors, 911 and media reports);
(3) Traveler information systems (e.g., message signs, media, Internet);
(4) Roadway reference markers to identify the exact location of incidents;
(5) Construction of crash investigation sites; and
(6) Designation of alternate routes.

Implementation of traffic incident management strategies can reduce freeway congestion by 20-30%, improve incident travel times by 20%, reduce secondary crashes by 80%, and reduce incident fuel consumption by 35%[4].

WisDOT has implemented an incident management program for the Interstate and Beltline System as part its Southwest Wisconsin ITS Program. The program includes: a safety patrol who operates during weekday peak periods; cameras and other traffic detectors; a communications system with links to the region's 911 Centers, WisDOT's Transportation Management Center in Milwaukee, radio communication infrastructure, the media, and enforcement and highway maintenance agencies; and roadway reference markers. The safety patrols have been particularly effective in improving the timeliness and efficiency of incident management, because they are constantly roving the freeway and they provide a wide range of functions within the incident management process.

WisDOT has also begun implementation of an alternate "blue" route system. Alternate routes are designated, clearly marked and signed arterial street routes, which generally parallel freeway segments. Motorists would use the routes during major freeway incidents and ramp closures. Motorists would be directed through advisory information to these routes. USH 51 from north of the county line to south of Stoughton has been designated and signed as an alternate "blue" route for Interstate 39/90. Additional alternate routes for Interstate 94 and possibly the Beltline are being considered.

Motor Vehicle Safety and Crash Data

The City of Madison Traffic Engineering Division maintains crash data for all reported crashes in the City involving motorists, bicyclists, and pedestrians. Because only crashes resulting in serious injury or more than $1,000 in property damage are reported, almost all of the reported crashes involve a motor vehicle. The crash data is obtained from reports filed with the Madison Police Department. Since 1984 the crash data has been computerized, and since 2001 the data has been converted to a GIS format for mapping in order to aid in identifying high crash locations and obtaining other information and statistics for analysis purposes. For example, analyses of crash types and driver factors in crashes can now be conducted for particular locations or location types (e.g., signalized intersections). City Traffic Engineering Division staff use the crash data to identify crash patterns, driver factors, or violations that may be mitigated through traffic control or roadway geometric changes, safety education efforts, and/or traffic enforcement activities.

From 2001-2003, there were an average of 4,873 motor vehicle crashes in the City of Madison (excluding the Beltline and Interstate) resulting in an average of 2,547 injuries and 13 fatalities. A little over one-third (37%) of the crashes occurred at intersections. Of the intersection crashes, around 47% occurred at signalized intersections with signals under normal operation, 3% at signalized intersections with signals on flash, and 50% occurred at non-signalized intersections.

[4] Dane County Incident Management Program Brochure (12/98)

The most common manner of collision for intersection crashes is vehicles entering an intersection at right angles and one vehicle making a left turn, together accounting for around two-thirds of such crashes. The most common driver factors in intersection crashes were failure to yield the right-of-way and disregarding traffic control. For non-intersection crashes, rear end is by far the most common manner of collision, accounting for around one-half of all such crashes. Sideswipe (i.e., vehicles going the same direction with angle impact) accounted for less than 10% of such crashes. The most common driver factors for non-intersection crashes were inattentive driving, following too close, failure to have control of vehicle, and failure to yield right-of-way.

Figure 15, on the next page, shows the high crash frequency intersections (excluding the West Beltline Highway) and street segments in the City of Madison from 2001-2004. As expected, the higher volume arterials such as East Washington Avenue, Stoughton Road (USH 51), Mineral Point Road and Gammon Road have a high crash frequency. Some safety improvements such as wider travel lanes, intersection improvements, and improved signing, are being incorporated as part of the ongoing East Washington Avenue reconstruction project. Other particular problem intersections include: Verona Road near the Beltline, S. Park Street/W. Badger Road; S. Park Street/Regent Street; 600 S. Whitney Way/Median Break (Westgate Mall); and the Gammon Road intersections between Mineral Point Road and the Beltline.

The above-mentioned South Park Street intersections, along with the S. Park Street/Beltline, N. Park Street/University Avenue, Fish Hatchery Road/Greenway Cross, and John Nolen Drive/North Shore Drive intersections have been the subject of an AAA Road Improvement Demonstration Program in 2005-'06. The program brings together public and private partners to contribute engineering expertise and cooperation between governmental units to develop traffic safety enhancements at high crash intersections. Typical enhancements include re-timed traffic signals, brighter and/or better placed signs, larger street signs, dedicated turn lanes, and improvements for pedestrians, bicyclists, and transit users.

Location specific data for crashes on local roadways in other cities and villages in the Madison metropolitan area is not readily available. Monona Drive is one roadway with an identified safety problem. The crash rate for Monona Drive is three times the state average for an urban roadway. Around three-quarters of the crashes are either rear-end or angle crashes, suggesting that left-turning movements into driveways are a major cause of crashes. The design for the reconstruction of Monona Drive, the first segment of which is programmed in 2008, calls for consolidation of driveways and construction of a median from Broadway to Dean Road.

Countywide, there was an average of 10,279 motor vehicle crashes per year from 2001-2004. Of those, an average of 6,977 involved property damage only, 3,260 also involved an injury, and 42 involved a fatality. Seat belt use by Dane County drivers was estimated at 77% in 2005 by WisDOT, compared to a statewide average of 73%.

Table 14, on page 44, shows the number, severity, and type of crashes, total persons injured, and estimated economic loss in the larger cities and villages in the Madison metropolitan area in 2004.

The Dane County Traffic Safety Commission, which is comprised of staff from the Dane County Highway and Transportation Department and Sheriff's Office, WisDOT Central and District Offices, and State Patrol, meets quarterly to review crash data, particularly fatalities, and to discuss safety issues such as planned projects, research, grant programs, and proposed legislation.

FIGURE 15

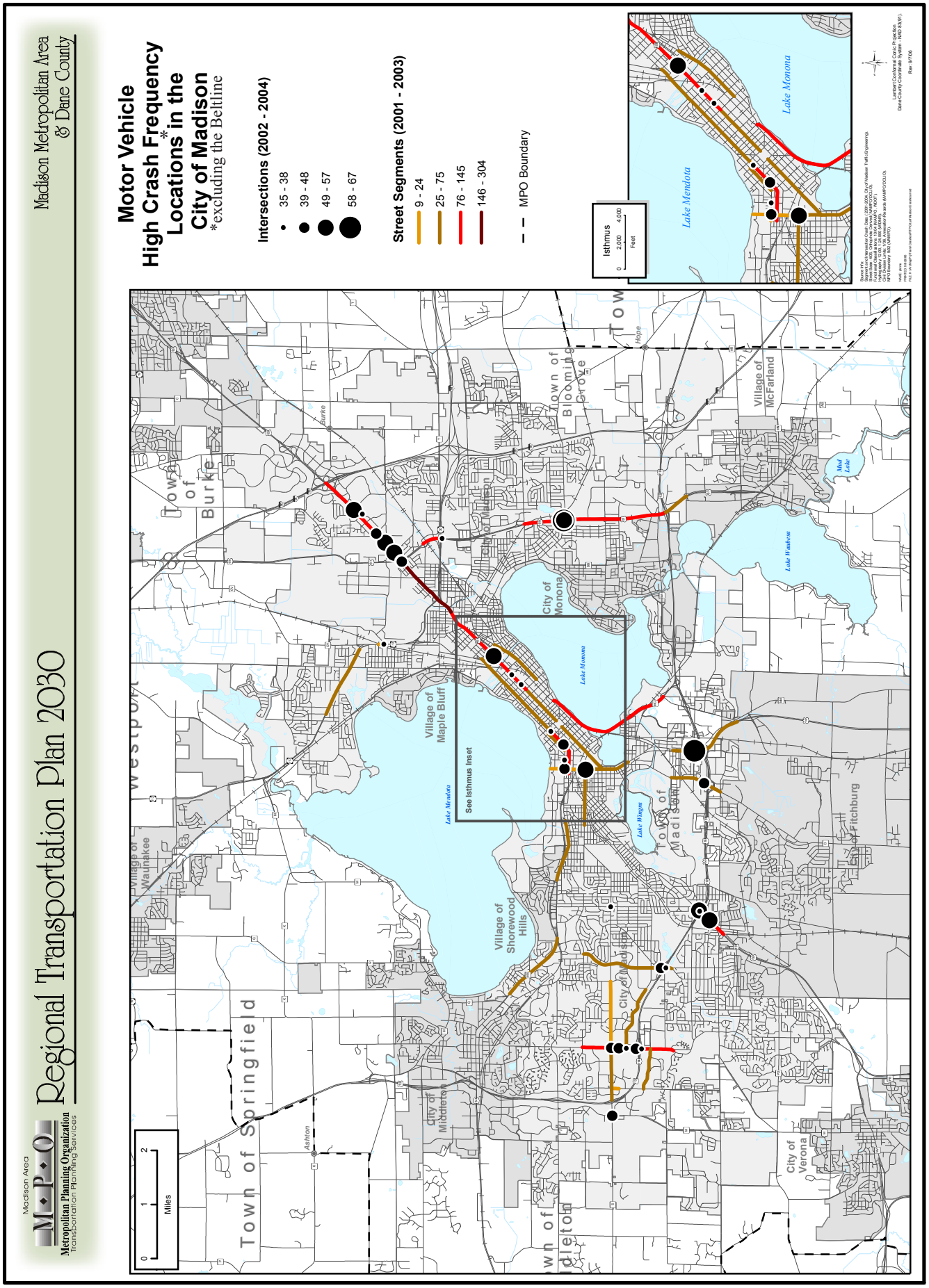

Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area & Dane County
Motor Vehicle High Crash Frequency Locations in the City of Madison
*excluding the Beltline
Intersections (2002 - 2004)
35 - 38
39 - 48
49 - 57
58 - 67
Street Segments (2001 - 2003)
9 - 24
25 - 75
76 - 145
146 - 304
MPO Boundary
Isthmus
0 2,000 4,000 Feet
Lake Mendota
Lake Monona
See Isthmus Inset
Town of Springfield
Town of Burke
Town of Bloomington
Village of McFarland
Village of Maple Bluff
Village of Shorewood Hills
Town of Madison
City of Fitchburg
City of Monona
City of Middleton
City of Verona
Village of Waunakee
Town of Westport
0 1 2 Miles

TABLE 14
MOTOR VEHICLE CRASHES IN MADISON AREA CITIES AND VILLAGES WITH 5000+ POPULATION
2004

Municipality	# of Crashes			Total Killed	Total Injured	Economic Loss	Crashes Involving			
							Alcohol		Speed	
	Fatal	Injury	Property Damage				#	%	#	%
City of Madison	13	1,838	2,916	14	2,601	$94,006,000	389	8.2	587	12.3
City of Fitchburg	1	123	417	1	179	$8,694,000	35	6.5	59	10.9
City of Middleton	0	131	289	0	174	$5,941,000	26	6.2	66	15.7
City of Monona	1	87	178	1	125	$5,328,000	18	6.8	47	17.7
City of Stoughton	1	42	96	1	55	$3,453,000	15	10.8	22	15.8
City of Sun Prairie	0	98	208	0	151	$4,983,000	17	5.6	36	11.8
City of Verona	0	22	74	0	28	$1,315,000	6	6.2	11	11.5
Village of McFarland	0	16	51	0	24	$1,090,000	9	13.4	6	9.0

Source: 2004 Wisconsin Traffic Crash Facts prepared by WisDOT

Note: Economic loss is calculated using 2003 National Safety Council estimates plus 3%, the consumer price index. Costs used: Fatality: $1,154,000, Incapacitating injury: $57,200, Non-incapacitating injury: $18,700, Possible injury: $10,300, and Property damage: $8,400.

WisDOT Southwest District staff review crash data for state roadways to identify high crash locations that merit further review for possible traffic safety enhancements. Crash data is reviewed as part of special corridor studies such as the two USH 51 studies on the segments from the Interstate south to the Beltline and between McFarland and Stoughton. Detailed review of crash data for specific locations is also conducted as part of the project programming process to determine if safety improvements can be incorporated into preservation projects.

Figure 16, on the next page, shows those state roadway segments in Dane County with crash rates that exceed the statewide average for that roadway type. Further analysis is warranted for these roadway segments to determine if there are any potential short-term and/or long-term engineering or traffic control solutions to enhance safety. The safety problem on USH 12 between STH 19 and Middleton has been addressed through the reconstruction of that roadway to a four-lane expressway. Other roadways in the Madison metropolitan planning area with higher than average crash rates include: Beltline from Gammon Road to John Nolen Drive; Verona Road (USH 18/151) south of the Beltline; segments of USH 51, numerous segments of STH 19; USH 14 west of Middleton; and East Washington Avenue (USH 151). The Verona Road/West Beltline corridor, entire Beltline corridor and interchanges, USH 51, and STH 19 are all subject to ongoing studies, which include addressing safety issues. As noted above, some safety improvements are being incorporated as part of the ongoing East Washington Avenue reconstruction project between Blair Street and Thierer Road.

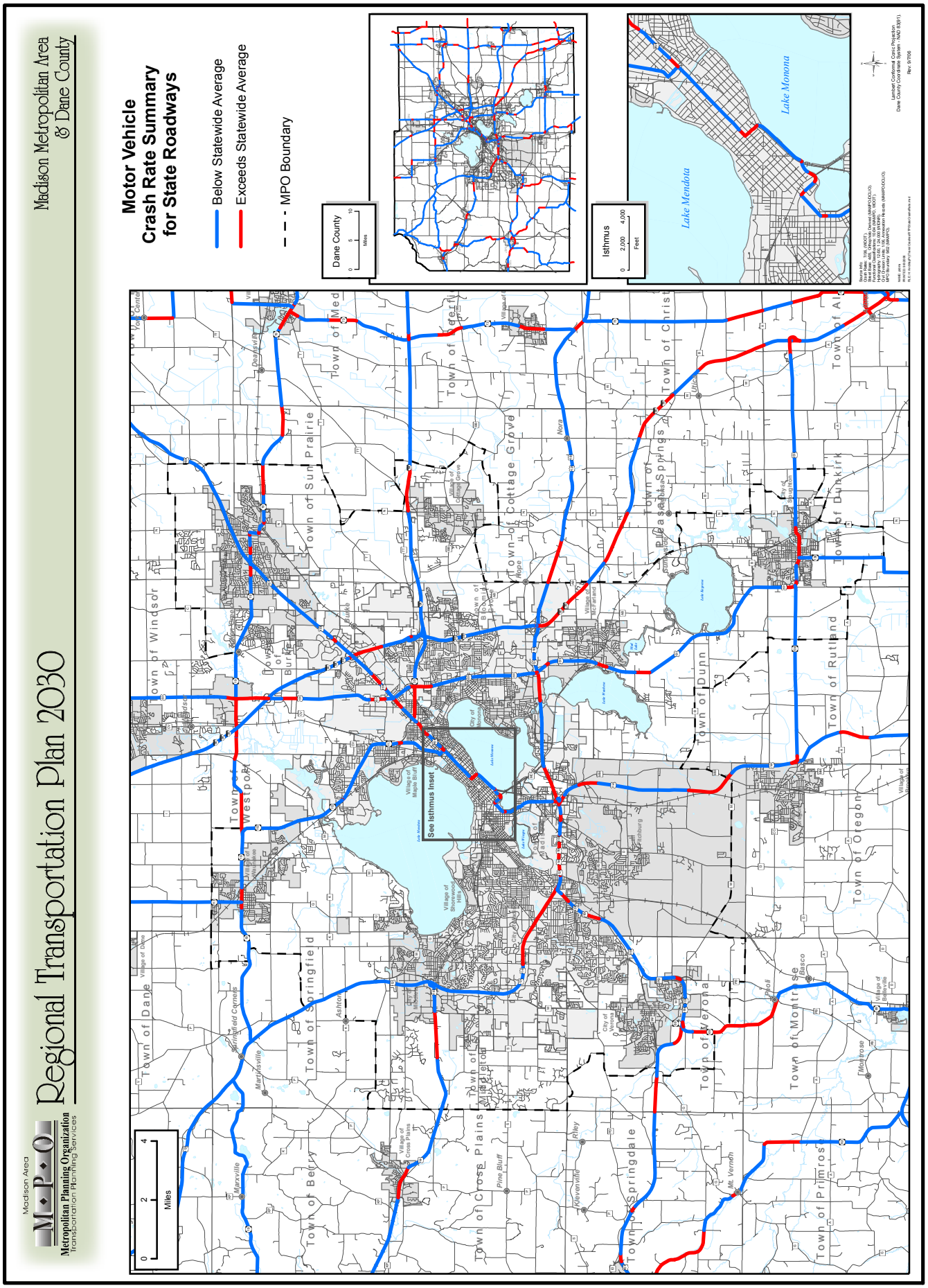
Roadway Pavement and Bridge Conditions

Roadways

Pavement management—the systematic process of overseeing the maintenance and repair of a network of roadways—allows transportation agency staff to maintain the condition of roadways and reduce pavement maintenance costs. Pavements have a varying life cycle dependent on many conditions. Implementation of a pavement management program or system allows transportation staff to determine pavement rating relative to all other pavements in a jurisdiction. It also allows year-to-year monitoring of pavements and, most importantly, facilitates predictions of when to cost effectively overlay, rehabilitate, or reconstruct a road.

The key is maintaining streets in good condition rather than allowing pavements to deteriorate to the point where extensive rehabilitation or reconstruction becomes necessary. This not only reduces maintenance costs in the long run, but also reduces consumer costs as well. Driving on roads in disrepair causes vehicles to deteriorate more quickly, require more maintenance, and consume more fuel.

FIGURE 16


Madison Metropolitan Area & Dane County
Regional Transportation Plan 2030
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Motor Vehicle Crash Rate Summary for State Roadways
Below Statewide Average
Exceeds Statewide Average
MPO Boundary
Dane County
Isthmus
Lake Mendota
Lake Monona
See Isthmus Inset
Miles
Feet

Pavement deterioration is caused by the combination of traffic loads and moisture, which is expedited during freezing and thawing periods in the late winter and early spring. Pavement at intersections is more prone to worsen because of slow-moving, frequent stop-and-go traffic that causes more stress on roadways. Improved pavement and construction techniques are now being developed that provide a more durable road surface. Earlier maintenance is also being emphasized.

The Pavement Surface Evaluation and Rating (PASER) system was developed by the Wisconsin Transportation Information Center to assist local communities in evaluating the condition of roadways and setting priorities for road maintenance, repair, and reconstruction. The PASER system involves visual evaluation of pavement surface and provides standard ratings to promote consistency. PASER ratings follow a scale from 1 to 10. PASER ratings of 8-10 indicate the roadway is relatively new with little or no maintenance required. Ratings of 5-7 indicate that routine maintenance (e.g. crack filling and/or preservative treatment (seal coating or overlay)) is required. A rating of 4 or less indicates that structural improvement (thick overlay or recycling of pavement) or reconstruction is warranted.

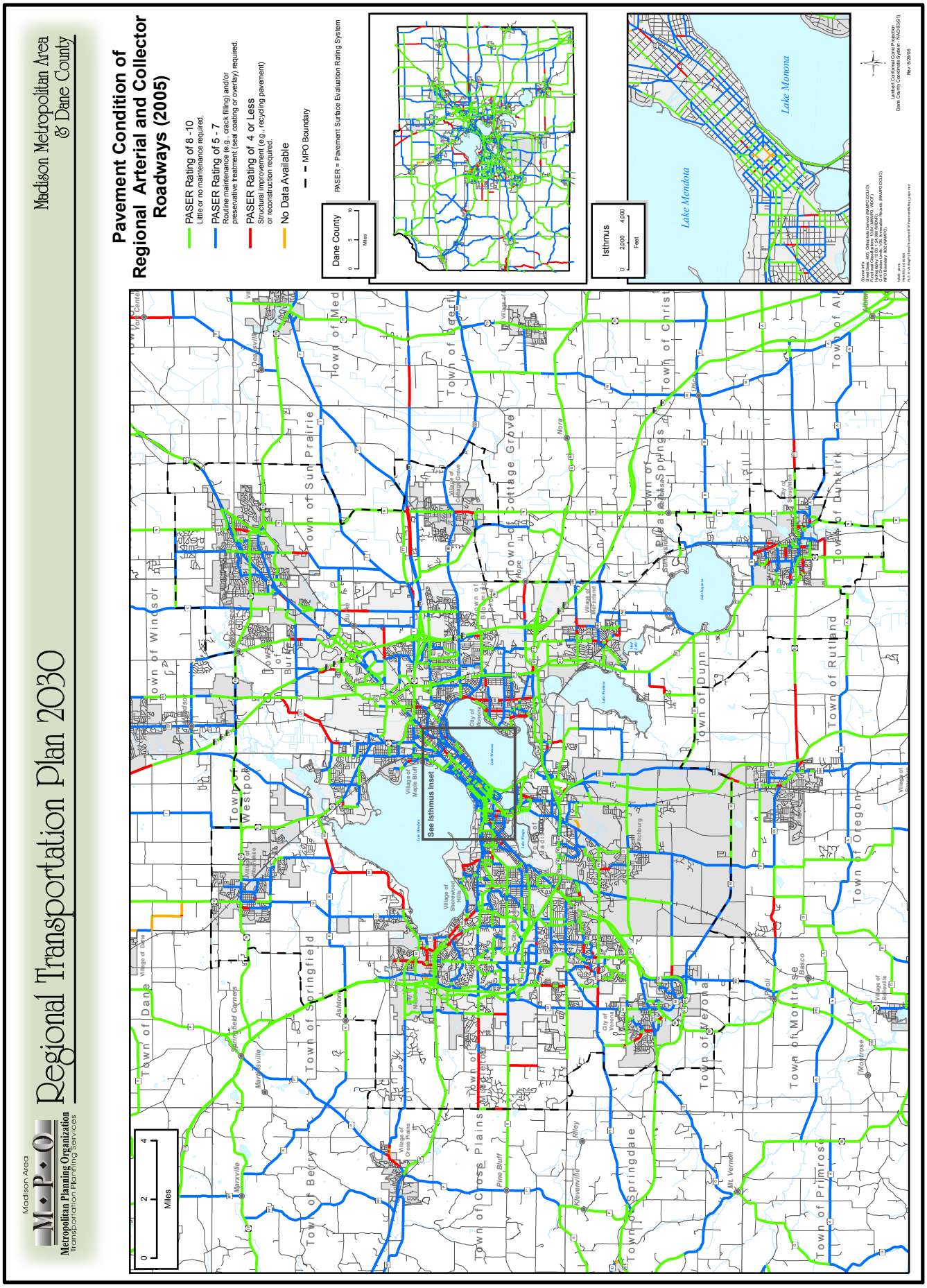
Figure 17, on the next page, shows the pavement condition of both local and state arterial and collector roadways. Approximately 51% of this roadway network has a PASER rating of 8-10, 42% has a PASER rating of 5-7, and 7% is rated 4 or below. Several of the major roadway segments rated 4 or below were either just resurfaced or reconstructed or are programmed for rehabilitation or reconstruction. These include: East Washington Avenue; CTH M (North); CTH CV; Lien Road; two of three segments of Monona Drive; University Avenue between Allen Boulevard and Segoe Road; two sections of S. High Point Road; and Park Street south of Century Avenue in the City of Middleton.

The City of Madison Engineering Department rates one-half of all city streets each year using the PASER system. Curbs are also separately rated. According to the City's 2004 Street Condition Report, the average pavement rating for the city's arterial and collector streets was just under 7 while the average rating for local streets was slightly lower at 6.7. Only 2.6 miles of the arterial roadway network and 4.1 miles of the collectors were rated 4 or below. The average curb rating was also just under 7. The city's roadway network totals over 739 miles. In 2004, 13 miles of streets were resurfaced or reconstructed and routine maintenance (crack filling, seal coating) was conducted on another 63 miles. The city also constructed almost 10 new miles of street.

The Wisconsin Department of Transportation (WisDOT) uses a more sophisticated pavement evaluation system that includes three different pavement measures: (1) International Roughness Index (IRI), with a scale of 5-0, 0 being the best; (2) Rut, measured in inches of depth; and (3) Pavement Distress Index (PDI), with a scale of 100-0, 0 being the best and is the rating used to illustrate the pavement condition of state roadways in Figure 20. The PDI rating is most similar to the PASER system. USH 12 was reconstructed to a four-lane expressway and Interstate 39/90/94 north of CTH V was resurfaced this year. Interstate 94, which also has the worst pavement rating, is programmed for major rehabilitation work in 2007-'08. Also, as noted above, East Washington Avenue (USH 151), a state-connecting roadway, is in the process of being reconstructed.

As expected, the overall pavement condition of state roadways is better than that of county and local arterial/collector roadways. Around 75% of state roadways are in the best pavement condition category compared to 36% of county and 44% of municipal arterial/collector roadways.

FIGURE 17


Madison Metropolitan Area & Dane County
Regional Transportation Plan 2030
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Pavement Condition of Regional Arterial and Collector Roadways (2005)
PASER Rating of 8 -10
Little or no maintenance required.
PASER Rating of 5 - 7
Routine maintenance (e.g., crack filling) and/or preservative treatment (seal coating or overlay) required.
PASER Rating of 4 or Less
Structural improvement (e.g., recycling pavement) or reconstruction required.
No Data Available
MPO Boundary
PASER = Pavement Surface Evaluation Rating System
Dane County
Isthmus
See Isthmus Inset
Lake Mendota
Lake Monona
Miles
Feet

Bridges

There are a total of 540 roadway bridge structures in Dane County. Of those, 284 are owned by the State, 85 by Dane County, 46 by the City of Madison, 33 by other cities and villages, 90 by towns, and two by UW-Madison.

The Federal Highway Administration (FHWA) has developed guidance for appraising and rating the structural integrity and functional design of bridges. Bridges are classified as "deficient" if they are either "structurally deficient" or "functionally obsolete" based upon National Bridge Inventory (NBI) ratings for various parts of the bridge structure and bridge geometry (deck, under-clearances, and approach roadway alignment). FHWA has also developed a system for rating the "sufficiency" of bridges, which indicates the bridge's sufficiency to remain in service. Bridges are assigned a value between 0 and 100 based upon evaluations in three areas—structural adequacy and safety, serviceability and functional obsolescence, and essentiality for public use—with special reductions allowed for extreme safety problems and lack of alternative routes.

The Wisconsin Department of Transportation (WisDOT) maintains a database on the condition of State and local bridges using the NBI rating system. It is updated every two years, and also indicates the year the bridge was last reconstructed. The ratings are used to determine eligibility for Federal funding under the Highway Bridge Replacement and Rehabilitation Program (HBRRP). In order to be eligible for HBRRP funding, bridges must: (a) be classified as deficient; (b) have a sufficiency rating of either less than 50 (for eligibility for replacement or rehabilitation funds) or less than 80 (for eligibility for rehabilitation funds); and (c) not have been reconstructed within the past ten years.

According to the bridge inventory, there are 50 state owned bridges classified as deficient with 11 of those classified structurally deficient and 39 classified functionally obsolete. Of those, 26 have sufficiency ratings low enough to make them eligible for Federal HBRRP funding. Six of these bridges are programmed for work, including the two Interstate 39/90/94 bridges over Lien Road, Buckeye Road (CTH AB) bridge over I-39/90, and Milwaukee Street bridges over I-39/90, which are scheduled for replacement.

There are 67 locally owned bridges classified as deficient (25 county, 20 City of Madison, 7 other city/village, 15 town) with 42 classified structurally deficient and 25 classified functionally obsolete. Of these, 57 have sufficiency ratings low enough to make them eligible for Federal HBRRP funding. Thirteen are programmed for replacement, including the East Washington Avenue bridges over the Yahara River and STH 30, Milwaukee Street bridge over Starkweather Creek, and CTH M (North) bridge over Spring Creek.

Congestion Management System for the Madison Urban Area

A Congestion Management System (CMS) is a systematic process of monitoring, measuring, and diagnosing the causes of current and future congestion in major travel corridors; evaluating and recommending alternative strategies to manage or mitigate current and future congestion; and monitoring and evaluating the performance of strategies that have been implemented to manage or mitigate congestion. Federal transportation legislation requires MPOs to develop and implement a CMS as part of the metropolitan transportation planning process (See 23 C.F.R. 500). The CMS provides a consistent basis to make transportation investment decisions and ensures that travel demand management (TDM) and transportation system management (TSM) measures are considered prior to roadway capacity expansion, in accordance with goals and objectives established by the Madison Area MPO.

The Madison Area MPO has a CMS that integrates the current traffic count databases maintained by WisDOT and the City of Madison; the TRANPLAN (TP+) regional travel demand model, which includes current bus transit network and capacities for the regional roadway network; and future traffic projections based on development assumptions derived from local land use plans. Roadway facilities experiencing current congestion or projected to experience congestion in the future are identified and alternatives developed to alleviate or manage the congestion.

The CMS is integrated into the MPO planning process. The Madison Area MPO serves as a forum for a variety of transportation planning activities that encompass all modes of transportation. MPO staff assists in coordination and provides technical support to all major regional transportation planning studies, including the ongoing Transport 2020 (East-West Transit Corridor) Alternatives Study, Verona Road/West Beltline Study, and USH 51 Corridor Studies. The MPO's TRANPLAN (TP+) regional travel demand model is used for all of these studies. In many cases, additional more detailed traffic operations modeling is conducted, which builds off of the regional travel modeling.

The Madison Area MPO CMS consists of the following components:

- CMS network and performance measures
- System monitoring/data collection
- Congestion management strategies
- System evaluation, which is integrated into the MPO planning process
- Review and update

CMS Network and Performance Measures

The CMS network consists of the entire countywide functionally classified arterial roadway system. This includes three primary components: (1) an outer radial system leading into the Madison area; (2) a circumferential system around the Madison area; and (3) an inner radial system leading to the central Isthmus area.

The outer radial system includes the following state roadways leading into the Madison area: Interstate 39/90 (North and South); Interstate 94 (East); USH 151 (Northeast); USH 12 (Northwest); USH 14 (West and South); USH 18/151 (Southwest); USH 12/18 (East); and USH 51 (North and South). The circumferential system includes primarily the Interstate 39/90 and Beltline system, but also CTH M (North), STH 19, USH 51 (Stoughton Road), and CTH PD (McKee Road). Two important future planned north-south arterials that will supplement the circumferential system are the CTH M (West)/Pleasant View Road corridor on the West side and CTH C/Reiner Road/Sprecher Road/CTH AB corridor on the East side.

The inner radial system includes the following local and state connecting roadways: East Washington Avenue (USH 151); Northport Dr./Packers Ave. (STH 113); Johnson/Gorham Streets; Williamson St./Atwood Ave.; John Nolen Dr.; Park St.; Fish Hatchery Rd. (CTH D); Nakoma Rd./Monroe St.; Mineral Point Rd. (CTH S); and University Ave.

The performance measure used for the CMS network is Level of Service (LOS), which is based upon observed and projected Volume to Capacity (V/C) ratios. The V/C ratio is the demand for travel on a roadway segment divided by the capacity of the roadway segment. LOS is a qualitative measure of roadway performance as outlined in the Transportation Research Board publication *Highway Capacity Manual* that is based on the V/C ratio. LOS is reported on a scale of A through F, with A representing the best operating conditions and F the worst.

Figure 14 on page 37 shows the existing congested network based upon Year 2000 observed traffic volumes and roadway capacities. Roadway segments shown in blue as "congested" had a volume-to-capacity (V/C) ratio of 0.75 to 0.89. This V/C ratio range is generally equivalent to LOS D. Those segments shown in red as "very congested" had a V/C ratio of 0.9 or greater or LOS E or F, indicating the roadway is operating at levels approaching or exceeding the design capacity.

A variety of factors determine the design capacity of a roadway, including the facility type (arterial, collector, etc.), number of travel lanes, lane width, average travel speed, spacing of intersections and driveways, and percent truck traffic. Capacities used in the TRANPLAN (TP+) travel model are planning capacities based primarily on facility type, number of travel lanes, and average travel speed. More detailed capacities are generally developed as part of corridor or area studies, which typically include traffic operations modeling. For the Madison area, LOS E has been determined to be the congestion level at which transportation system performance is no longer acceptable due to traffic interference.

System Monitoring and Data Collection

The Madison Area MPO collects and analyzes traffic count data taken by the City of Madison Traffic Engineering Division and WisDOT, and maintains a database of historical traffic volume data. Regular traffic counts are taken on the entire CMS network as well as most of the collector roadways in urban areas.

The City of Madison collects annual traffic counts on all central area arterials and collectors. On the East and West sides of the City, counts are taken every two years. Bicycle traffic counts are also taken on University Avenue and at several path locations. WisDOT collects traffic counts on the Interstate every year. Counts on other arterial and collector roadways are taken every three years. These counts are in addition to the few locations in the county that are part of the Highway Performance Monitoring System where continuous daily counts are taken. Continuous counts are also available at several locations on the Beltline where traffic detectors have been installed as part of the ITS Program. This traffic volume database is supplemented by counts taken as part of special studies.

In addition to the traffic volume data, special origin-destination (O/D) surveys are done every ten years or so as part of the major update of the regional transportation plan. The O/D survey information is used in conjunction with socio-economic data, primarily obtained from the U.S. Census, and traffic count data to update and calibrate the TRANPLAN regional travel forecast model maintained by Madison Area MPO staff. The TRANPLAN (TP+) model is then used to develop future year traffic forecasts based upon local community and neighborhood land use plans.

Congestion Management Strategies

The Madison Area MPO goals and objectives and the CMS outline the strategies that are considered within the metropolitan transportation planning process to resolve congestion issues. The strategies, which are discussed in other sub-sections of this section of the plan report, are listed below. Some can be implemented in the shorter term while others such as land development strategies and high capacity transit service are longer term strategies.

1. Travel Demand Management (TDM) Strategies
    (a) Promotion of ridesharing, alternative work hours, and telecommuting
    (b) Park-and-ride facilities
    (c) Guaranteed ride home programs
    (d) Land use planning and development strategies that coordinate planned development with transportation system improvement and encourage development patterns more easily served by public transportation and walking and bicycling

2. Transportation System Management (TSM) Strategies
   (a) Access Management
   (b) Intersection Improvements
   (c) Peak period curb-lane parking restrictions
   (d) Operational improvements (traffic signal coordination, freeway ramp meters, HOV lanes, etc.)
   (e) Incident (crashes, construction, special events, etc.) management
   (f) Use of intelligent transportation systems and advanced public transportation system technology (traveler information systems, emergency vehicle signal pre-emption, incident detection and response, transit vehicle signal priority, etc.)
3. Transit service enhancement or expansion
4. Bicycle and pedestrian facilities
5. Roadway capacity expansion (i.e., addition of general purpose travel lanes)

System Evaluation and Review

The implementation and impact of the congestion management strategies are tracked through the annual development of the Transportation Improvement Program (TIP) and collection of data on motor vehicle traffic and bicyclist volumes, bus transit ridership and service improvements, carpooling, and land development. The socio-economic data inputs and TRANPLAN model roadway and transit networks are updated in advance of each regional transportation plan update.

The CMS is only one component of the overall metropolitan transportation planning process. It is integrated with the long-range *Regional Transportation Plan* (RTP), *Transportation Improvement Program* (TIP), and area and corridor studies through its data and analysis functions. The goals and objectives of the RTP and the process for preparing the RTP ensure that an aggressive program of TDM, TSM, and alternative mode CMS strategies are considered before roadway capacity expansion. The impacts of such strategies, including a high capacity transit system, are evaluated as part of the travel modeling analysis for the RTP prior to consideration of roadway capacity expansion. The CMS provides system performance information, which is used to identify corridors or segments for further detailed analysis as part of corridor or area studies or traffic impact studies conducted for neighborhood plans or large development projects. The CMS provides alternative congestion management strategies for consideration in these studies, which ultimately provide recommendations for preferred strategies to be incorporated into the RTP and TIP. An analysis of alternative CMS strategies other than roadway capacity expansion is conducted as part of these studies. The CMS also provides system performance information for local jurisdictions that implement the CMS strategies. All elements of the CMS are reviewed and updated as part of each RTP update.

The following are ongoing and planned major corridor studies that have been or are being initiated to develop short- and long-term solutions to address identified congestion problems in the Madison metropolitan area:

- East-West Transit Corridor Alternatives Analysis Study ("Transport 2020")
  Status: Initiated Phase II (EIS/PE)

- Verona Road/West Beltline Environmental Impact Study
  Status: Draft EIS. Possible short-term, lower cost solutions being studied.

- USH 51 (I-39/90/94 to McFarland) Corridor Study
  Status: Needs assessment completed; EIS/Alternatives Analysis underway.

- USH 51 (McFarland to Stoughton) Corridor Study
  Status: Needs assessment completed; EIS/Alternatives Analysis underway.

- Interstate 39/90 (USH 12/18 to South State Line) Study
  Status: Study underway.

- North Mendota Parkway Corridor Study
  Status: Completed; work underway on intergovernmental agreement; environmental study to be done to identify best routing for west end of corridor.

- West Beltline (USH 14 to Interstate 39/90) TSM/Safety Study
  Status: Study just getting underway.

- STH 19/STH 113 (Waunakee to Sun Prairie) TSM/Access Study
  Status: Study just getting underway.

Intelligent Transportation Systems (ITS) and the Regional ITS Architecture

Intelligent Transportation Systems (ITS) refers to a broad range of technologies, including information processing, communications, traffic control, and electronics, which can be used to improve the safety, efficiency, dependability, and cost effectiveness of the transportation system. More specifically, ITS technologies can:

- Collect and transmit real-time information on traffic conditions and bus transit schedules for travelers before and during their trips, making trips more predictable and thereby saving traveler's time and money;
- Improve the efficiency of the roadway network with technologies such as traffic signals that respond to flows and peak demands;
- Improve the productivity and cost effectiveness of public transit through automated vehicle locator systems that increase on-time performance and in-vehicle monitoring systems that ensure timely vehicle maintenance;
- Mitigate congestion by reducing the number of traffic incidents, clearing them more quickly when they occur, and rerouting traffic around them where appropriate;
- Support better emergency response times and services;
- Improve safety through monitors that detect early bridge and roadway icing and alert drivers;
- Improve the productivity of commercial fleets by using automated tracking, dispatch and weigh-in-motion systems that speed vehicles through much of the paperwork typically associated with interstate commerce; and
- Assist drivers in reaching desired destinations with navigation systems enhanced with path finding or route guidance.

Given all the different existing and emerging technologies, it is important that standards be developed nationally and regionally to ensure that projects are integrated and will work together with ITS systems from other agencies and jurisdictions. Federal law requires that all Federally funded ITS projects be in conformance with an adopted national ITS architecture and appropriate technical standards in order to provide consistency with ITS strategies and projects. However, it is recognized that not all elements of the national architecture may be applicable for every state or region. Thus, conformance with the national architecture is interpreted to mean use of it to develop a regional architecture, which is required for larger metropolitan areas such as Madison.

An ITS architecture is a structured approach or framework for defining, planning, and integrating ITS. It defines needed systems and functions and how to integrate different types of existing and future technology projects so they work seamlessly and cost effectively. The architecture identifies agreements and standards and the interconnections and information exchanges among the different systems of each agency and jurisdiction. A common vocabulary defined by the ITS architecture allows better communication between colleagues.

As part of its Southwest ITS Program, WisDOT contracted with a consultant, TransCore, to prepare the Southwest Wisconsin ITS Architecture for the ten-county southwest Wisconsin area, which includes Dane County. The architecture was commissioned to look at the needs of WisDOT SW District and local agencies and to identify how communications and data could be shared over a wide range of time horizons.

Development of the Southwest Wisconsin ITS Architecture was completed in 2002 and includes the following federally required components:

- Description of the region;
- List of participating agencies and other stakeholders and their ITS inventories (see Table 15 for list of stakeholders in Dane County);
- An operational concept that assists in defining roles and responsibilities of the participating agencies and other stakeholders;
- List of interagency agreements necessary to operate and implement the systems identified in the inventory;
- Functional requirements for systems;
- Interface requirements between systems and information flows between subsystems and terminators;
- ITS standards that support regional and national interoperability; and
- Sequence of ITS projects required for implementation.

TABLE 15
SOUTHWEST WISCONSIN ITS ARCHITECTURE STAKEHOLDERS WITHIN DANE COUNTY

Traffic Management
• WisDOT Southwest District Transportation Management Center (Madison) • WisDOT Southeast District Traffic Operations Center (Milwaukee) *[Note: Shown even though outside county due to significant role it is anticipated to play in statewide freeway operations.]* • City of Madison Traffic Engineering Division • City of Middleton and Sun Prairie Public Works Offices
Emergency Management
• Wisconsin State Patrol District 1 Dispatch Center (DeForest) • Dane County Sheriff's Department • Dane County 911 Center • City of Fitchburg, Middleton, Monona, and Sun Prairie Dispatch Centers • UW-Madison Police and Hospital Dispatch
Information Service Provider
• WisDOT Southwest District Transportation Management Center (Madison) • WisDOT Southeast District Traffic Operations Center (Milwaukee) • UW-Madison Special Events Office
Transit Management
• Metro Transit Dispatch • Canadian Pacific (CP) Rail/AMTRAK Management Center
Operations and Maintenance
• Dane County Highway Department Dispatch • City of Madison Maintenance Dispatch
Parking Management
• Dane County Regional Airport Parking • Dane County Alliant Energy Center Parking • Dane County Parking Ramp • City of Madison Parking Structures • UW-Madison Parking Structures

Development of the regional architecture started with a stakeholder outreach effort focused on determining existing and planned ITS deployments. User needs were assessed and user services that could fill stakeholder needs were determined. Service categories identified as needed are: (a) Travel and Traffic Management; (b) Public Transportation Management; (c) Electronic Payment; (d) Emergency Management; and (e) Information Management. Service categories recognized as not being needed at the present time are Advanced Vehicle Safety Systems and Commercial Vehicle Operations. Applicable market packages were then identified along with critical project concepts. This information was then utilized to build the regional architecture that maps market packages to user services and encompasses critical project concepts. Finally, from the regional architecture, a list of National ITS standards necessary to deploy the architecture was identified.

ITS applications that have been implemented as part of WisDOT's Southwest Wisconsin ITS Program were discussed above in the section on Transportation System Management (TSM). Components of this program include real-time information from traffic detectors and closed-circuit cameras, communications system, a comprehensive incident management program, and Beltline ramp meters.

Also discussed above in the TSM section, the City of Madison Traffic Engineering Division has a traffic signal control system for optimizing traffic flow. Most every arterial corridor in the Madison area is part of this coordinated system. The City has also implemented an electronic parking payment system at its parking ramps.

The Madison Area MPO is in the process of implementing an Internet-based ride matching service in cooperation with the

The Dane County Highway Department has implemented automatic vehicle locator technology on its maintenance vehicles to facilitate quicker response to changing winter conditions and more accurate maintenance response.

Metro Transit has installed an ITS system for its fixed route and directly operated paratransit services with the following features:

1. New Voice Radio System. Metro will use its own talk groups, but have the capability of joining talk groups set up for emergencies.

2. New Data Radio System. On-board computer terminals allow for data messaging, reducing the quantity of voice traffic.

3. Automatic Vehicle Location (AVL). Metro fixed route, paratransit, and support vehicles are equipped with Geographic Positioning Signal (GPS) devices, providing real-time vehicle location information to Metro's Dispatch Center. The location information is used to estimate bus arrival times and this information is available to passengers via information signs at the bus transfer points and UW and MATC campuses. Beginning in the late fall of 2006 or early 2007, passengers will be able to access the real-time bus location and schedule information via the Internet. The AVL data is providing Metro with accurate on-time performance data, which is being used to create more efficient route schedules. The data also allows Metro to better manage the fleet on bad weather days and provides bus drivers with a visual display of their schedule adherence and next scheduled time point.

4. Automatic Passenger Counters (APCs). Forty buses are equipped with APCs that count boardings and alightings and mark the data by time (trip) and location. The APCs are being rotated through the fleet to provide data on all route services, providing valuable information for planning purposes.

5. Passenger Information. All fixed route buses are equipped with internal and exterior automatic annunciators and a visual display sign for stop announcements. As noted above, real-time schedule information is available via signs and will be available via the Internet.

6. Electronic Fare Collection. All fixed route buses have been equipped with new fare box card readers that use preprogrammed magnetic strip "swipe" card technology. The electronic fare system is interfaced with the AVL system, providing data on the number of passenger boardings by fare type at the route, trip, and bus stop level.

7. Transit Security. Video surveillance cameras have recently been installed on some buses and at two of the four transfer points.

8. Transit Maintenance. On-board vehicle condition sensors monitor system status and transmit a data message if the bus may have a problem.

Metro's system has been built with an open architecture that will allow future applications to be relatively easily plugged into the system. Metro is currently exploring use of technology that allows for use of signal priority, extending the green phase at an intersection in the event a bus is running behind schedule.

All Federally funded ITS projects must be developed using a systems engineering approach. The systems engineering analysis shall include, at a minimum the following:

· Identification of portions of the regional ITS architecture being implemented;
· Identification of participating agencies roles and responsibilities;
· Requirements definitions;
· Analysis of alternative system configurations and technology options to meet requirements;
· Procurement options;
· Identification of applicable ITS standards and testing procedures; and
· Procedures and resources necessary for operations and management of the system.

The following future high priority project concepts have been identified, which comply with the regional architecture, address stated critical needs of the region's stakeholders, and are likely candidates for future regional deployments. Partial deployment has already occurred for some of these, including (1) traffic monitoring and traveler information, (3) county maintenance management project, (4) agency data sharing, (7) ramp meters, and (9) dynamic message signs.

1. Interstate Traffic Monitoring & Traveler Information
2. Advanced (i.e., Adaptive vs. Closed Loop) Signal Operations/Coordination & Surface Street Traffic Monitoring
3. County Maintenance Snow & Ice Management Project
4. Agency Data Sharing
5. Public Safety In-Vehicle Signing with Real-Time Route Selection
6. Enhanced Weather and Pavement Conditions Monitoring
7. Madison Area Ramp Metering
8. Rural, Non-Interstate Traffic Monitoring
9. Arterial Dynamic Message Signs & Dynamic Trailblazer Signing
10. Smart Work Zone

The Madison Area MPO, as the MPO for the Madison metropolitan area, is responsible for the creation, maintenance, and updating of the regional ITS architecture. It is anticipated that WisDOT Southwest District will continue to take the lead on ITS deployment, given the expertise of its staff. The Madison Area MPO will continue to act as a forum for the development of ITS projects. Updates to the regional ITS architecture will be done as part of the overall regional transportation planning process. As new ITS initiatives are developed, the regional ITS framework will ensure that operational and cost efficiencies are realized and that transportation system performance is improved—the ultimate goal of these investments.

Public Transit

Introduction

The major transit operator in the Madison Metropolitan area is Metro Transit, which is owned by the City of Madison and operates within the oversight of the Mayor, Common Council, and the City's Transit & Parking Commission. Metro contracts with local units of government, UW-Madison, and the Madison Metropolitan School District to provide service. Metro provides fixed-route service using large buses and demand-responsive paratransit service using small buses for those unable to use the fixed-route service. Other transit services in the metro area include shared-ride taxi and other demand responsive services, special event shuttles, state vanpools, and ridesharing services.

The Metro fixed-route transit system continues to serve work and school trips to the downtown Madison/UW-Madison campus area well. These trips account for the vast majority of weekday ridership on the system. The restructuring of the system from a radial to a timed transfer point system has allowed Metro to better serve the developing activity/employment centers on the urban fringe. Combined with Metro's good service coverage within the Cities of Madison and Middleton and its excellent service span, the system is able to provide a viable transportation alternative for many, if not most, trips within these communities.

A major challenge for the transit system, however, continues to be how to effectively serve the developing activity/employment centers and neighborhoods on the urban fringe, particularly those located beyond the Interstate and Beltline System. In particular, the challenge is providing a level of service that can compete more effectively with the private automobile. Most of the growing activity/employment centers have not been designed for efficient transit service, and parking is generally plentiful and free. Travel times from peripheral neighborhoods to the downtown/UW campus area are long relative to driving due to the lack of limited-stop or express commuter service.

Funding is another major challenge, given the lack of a dedicated funding source for transit and a very tight budget situation at the state and local levels. Identification of new sources of funding and a new governance structure for transit are critical tasks for the final phase of the Transport 2020 (East-West Transit Corridor) Study, which is underway.

Current Transit Services in the Madison Metropolitan Area

Metro Fixed-Route Service Rideship, and Performance Trends

Metro Transit provides bus service on regular routes and schedules, providing local, commuter, and circulator service. Metro utilizes a timed transfer point system. "Core" routes operate in high-volume corridors through the downtown/UW campus area between the transfer points, and provide all day service. "Commuter" routes provide direct weekday peak-hour service from residential areas to central and peripheral employment centers, overlapping with significant portions of the core routes. A few provide faster service with limited stops over some portion(s) of the route. "Peripheral" routes connect outlying residential neighborhoods with the transfer points for access to the core and connecting routes. Some operate only during off-peak and weekend times when direct commuter service is not available. "Connecting" routes connect the transfer points and major peripheral activity centers, providing direct cross-town service (e.g., south to west side). "Circulator" routes operate within the UW campus, downtown, and central neighborhoods. The large number of commuter routes, along with the core routes, provides most City of Madison and Middleton residents with direct service to the downtown/UW-Madison campus area without the need to transfer.

In 2005, Metro had 47 regular weekday routes (excluding UW-Madison campus and supplementary school service) with 168 buses operated in maximum peak-period service. There were 17 weekend routes. On weekdays while school was in session, Metro provided a total of 1,104 scheduled revenue hours of service on regular routes. A total of 460 scheduled revenue hours of service was provided on Saturdays and 410 on Sundays. The City of Monona contracts with a private provider for its own weekday commuter service, providing four a.m. and p.m. trips to the downtown/UW campus area.

Metro's service area is 68 square miles. The Monona transit service area covers another 1.6 square miles not served by Metro. Approximately 95% of the City of Madison's 2000 population was served by a Metro route, while 81% of the City of Middleton population was served. Around one-half of Fitchburg residents were served. Metro tracks service coverage of housing units within the City of Madison for which data can be updated on an annual basis. As of December 2005, 90% of the housing units in the City were within Metro's service area. This reflects the fact that expansion of the transit network is not keeping pace with development in new fringe area neighborhoods such as Madison's Southwest side. Figure 18, on the next page, illustrates the Metro and City of Monona fixed-route transit network and the weekday service area.

Metro Paratransit and Monona E/D Service

Metro provides paratransit service on a demand responsive, advance reservation basis for persons who are unable to use Metro's regular fixed-route service. Persons must be certified as eligible to receive the service in accordance with guidelines established by the Americans with Disabilities Act (ADA). Service is provided within three-quarters of a mile on each side of regular routes, excluding commuter routes, and is provided during the same hours that the fixed-routes operate. The service is provided door-to-door or curb-to-curb, depending upon the passenger's needs. Metro provides directly operated service on weekdays, but contracts with private providers for weeknight and weekend service and other service that it does not have the capacity to handle.

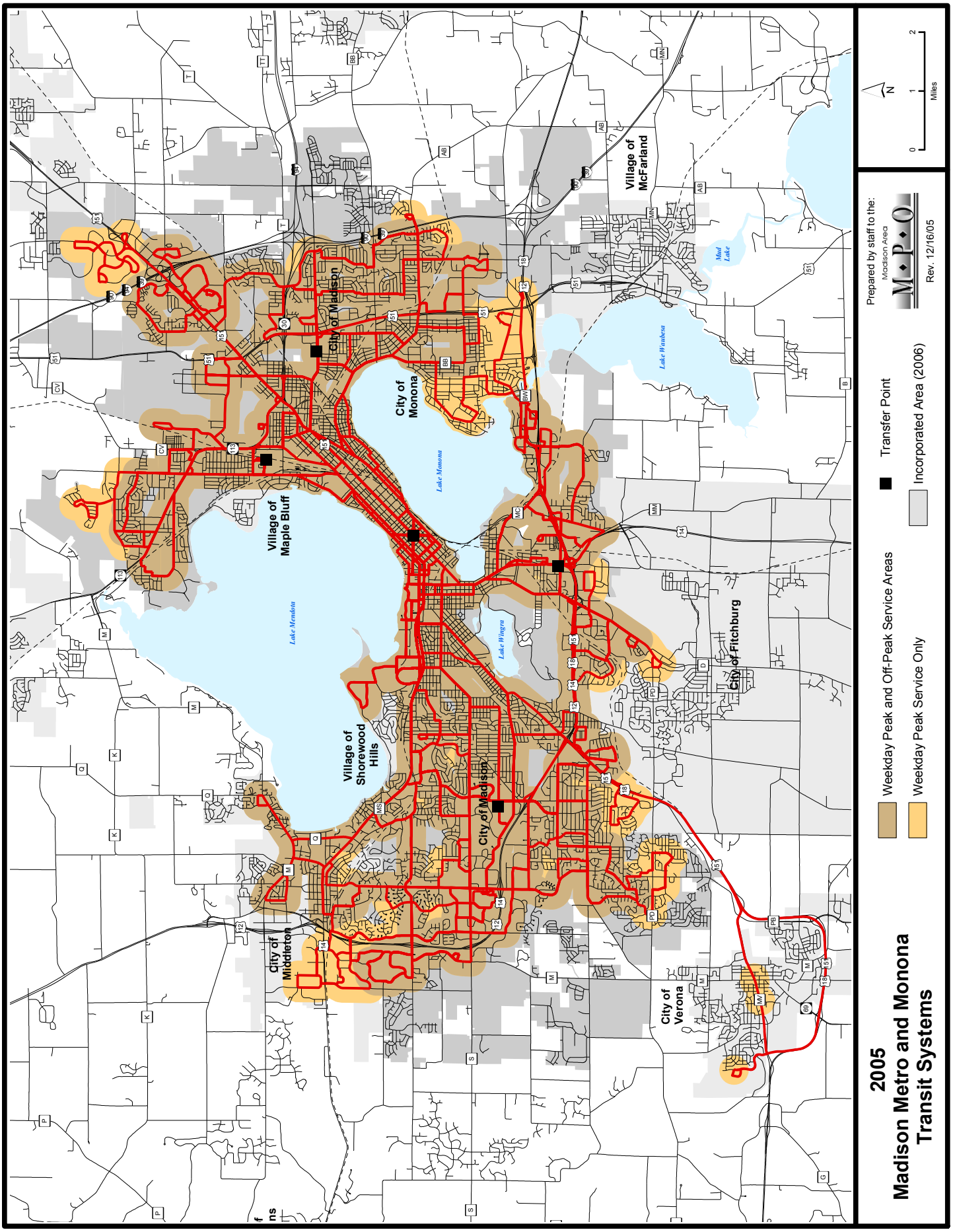
The City of Monona contracts with a private provider for service, called Monona Lift, which is designed for the elderly and persons with disabilities, but is also available to the general public. The service is a point deviation system with scheduled stops at fixed checkpoints along a general route. Buses deviate up to three-quarters of a mile from the general route between the checkpoints to pick up/drop off elderly and disabled passengers with an advance reservation.

Shared-Ride Public Taxi and Private Taxi Service

The Cities of Sun Prairie and Stoughton contract with private providers for shared-ride taxi service. Shared-ride taxi service is a form of door-to-door, demand-responsive transit (i.e., no set routes or schedules) similar to the familiar taxicab service. The difference is that with shared-ride service, passengers with different origins and/or destinations may be transported simultaneously. Shared-ride taxi systems operate with scheduled service hours and days of operation. Requests for service may be made upon demand or up to 24 hours in advance. Subscription trips are accepted, but are purposely limited to ensure on-demand service. In 2005, the Sun Prairie and Stoughton taxi systems provided around 88,800 and 34,900 trips respectively. Youth account for almost one-half of the passengers on the Sun Prairie system, as the Sun Prairie School District provides only limited transportation for students residing in the city.

Three private taxicab operators provide individually arranged transportation services for the general public throughout the metro area. One of the operators, Badger Cab, provides shared-ride service, while the others are metered cab operations. They operate without public funding, and the fares reflect this. Private taxi service is not required to be and is generally not provided with accessible vehicles. However one of the taxi companies, Union Transit, has voluntarily purchased an accessible vehicle and offers accessible service.

FIGURE 18


2005
Madison Metro and Monona
Transit Systems
Weekday Peak and Off-Peak Service Areas
Weekday Peak Service Only
Transfer Point
Incorporated Area (2006)
Prepared by staff to the:
Madison Area
M•P•O
Rev. 12/16/05
N
0
1
2
Miles
City of Madison
City of Monona
Village of McFarland
Village of Maple Bluff
Village of Shorewood Hills
City of Fitchburg
City of Middleton
City of Verona
Lake Mendota
Lake Monona
Lake Wingra
Lake Waubesa
Mud Lake

Specialized Transportation Services

The Adult Community Services Division of the Dane County Department of Human Services (DCHS) administers several accessible routed group ride and demand-responsive services for the elderly and persons with physical or developmental disabilities in the metro area and countywide. DCHS contracts with private providers for these services. The services are generally provided as a supplement to Metro service for persons residing or traveling outside Metro's service area, and transport people to necessary support and medical services, jobs, and training.

Using volunteer drivers in private vehicles, the Retired Senior Volunteer Driver Escort Program (RSVP) provides individual, and in a few cases, small group rides for the elderly when other options are not available. Most trips are for medical purposes, which is the highest priority. The City of Madison, Dane County, UW-Madison, and various non-profit organizations provide program-specific transportation services, which are targeted primarily at low-income persons.

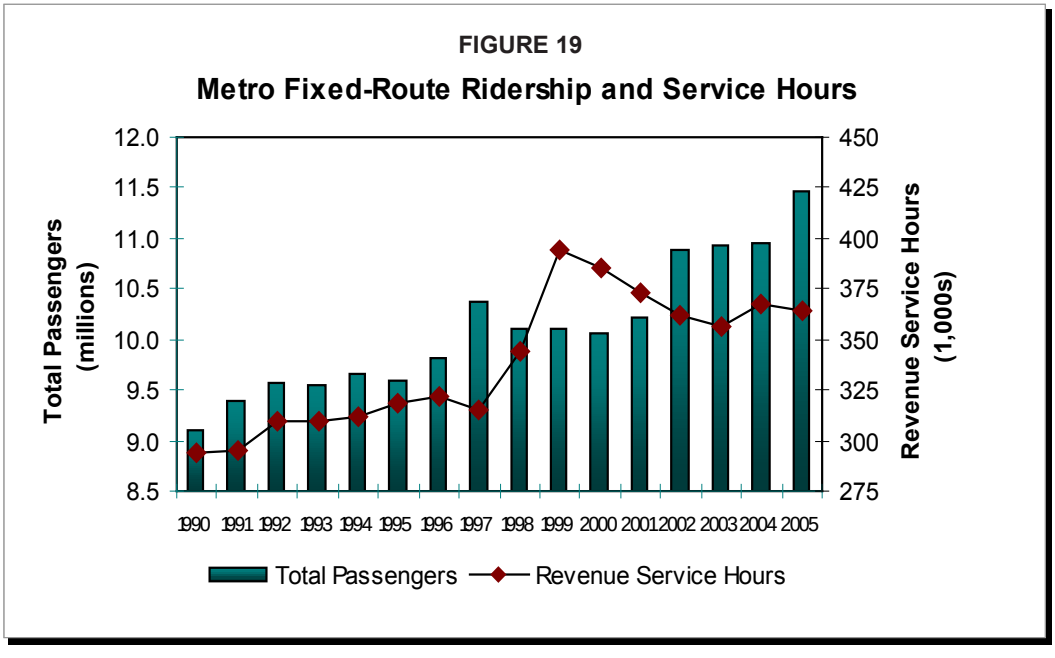
Metro Fixed-Route Service, Ridership, and Performance Trends

Metro Transit provides a much higher level of service and has much higher ridership than similarly sized communities around the country. Metro provides 2.5 times more hours of service and four times as many riders per capita than other urban areas with similarly sized population.

Service frequencies are highest (<5 to 15-minute peak, <15 to 30-minute off-peak headways) in the greater Isthmus area where many routes converge in transit corridors leading to the downtown/UW campus area. The weekday span of service for most areas with all-day service is excellent, with routes running 17-19 hours a day.

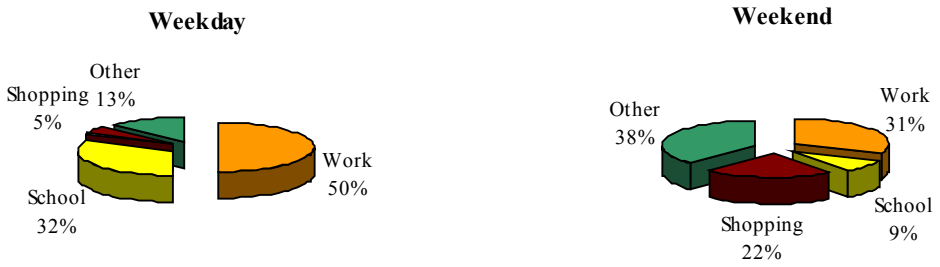
Since an inevitable period of adjustments with the new transfer point system in 1998-'99, ridership has increased and service efficiency has improved. As illustrated by Figure 19, the overall ridership trend has been positive since 1990. In 2005, total ridership was 11.48 million, a 4.7% increase compared to 2004 and the highest total since 1985. Metro carried 31.5 passengers per revenue service hour. Most of the increase in ridership the past few years has been on the commuter routes and the UW-Madison campus route, which was made free in 2002. Implementation of unlimited ride pass programs for UW-Madison and MATC students and employees, and City of Madison and St. Mary's Hospital employees has helped boost ridership along with service improvements and high gas prices in 2005.

FIGURE 19



As illustrated by Figure 20, work and school trips account for the vast majority of weekday passengers on Metro's regular fixed routes. The distribution of transit trip purposes is more even for weekend trips.

FIGURE 20
DISTRIBUTION OF TRIP PURPOSES FOR TRIPS ON METRO'S REGULAR FIXED ROUTE SYSTEM



As illustrated by Figure 19, the overall trend in revenue service hours has been positive since 1990. The number of service hours increased 25% between 1997 and 1999, the first full year the new transfer point system was in place. From 2000-2003, the number of overall service hours was then reduced each year to improve efficiency and achieve a more financially sustainable level of service. Service improvements were still made through strategic reallocation of service hours. Service hours increased 2.7% in 2004 with implementation of East side service improvements, but dropped slightly again in 2005. The total number of service hours was still 15.6% higher in 2005 than 1997—prior to implementation of the transfer point system—and 24% higher than in 1990. Table 16 provides service level and ridership statistics for 2000-2005.

TABLE 16
METRO FIXED-ROUTE TRANSIT SYSTEM ANNUAL SERVICE LEVELS AND RIDERSHIP: 2000-2005

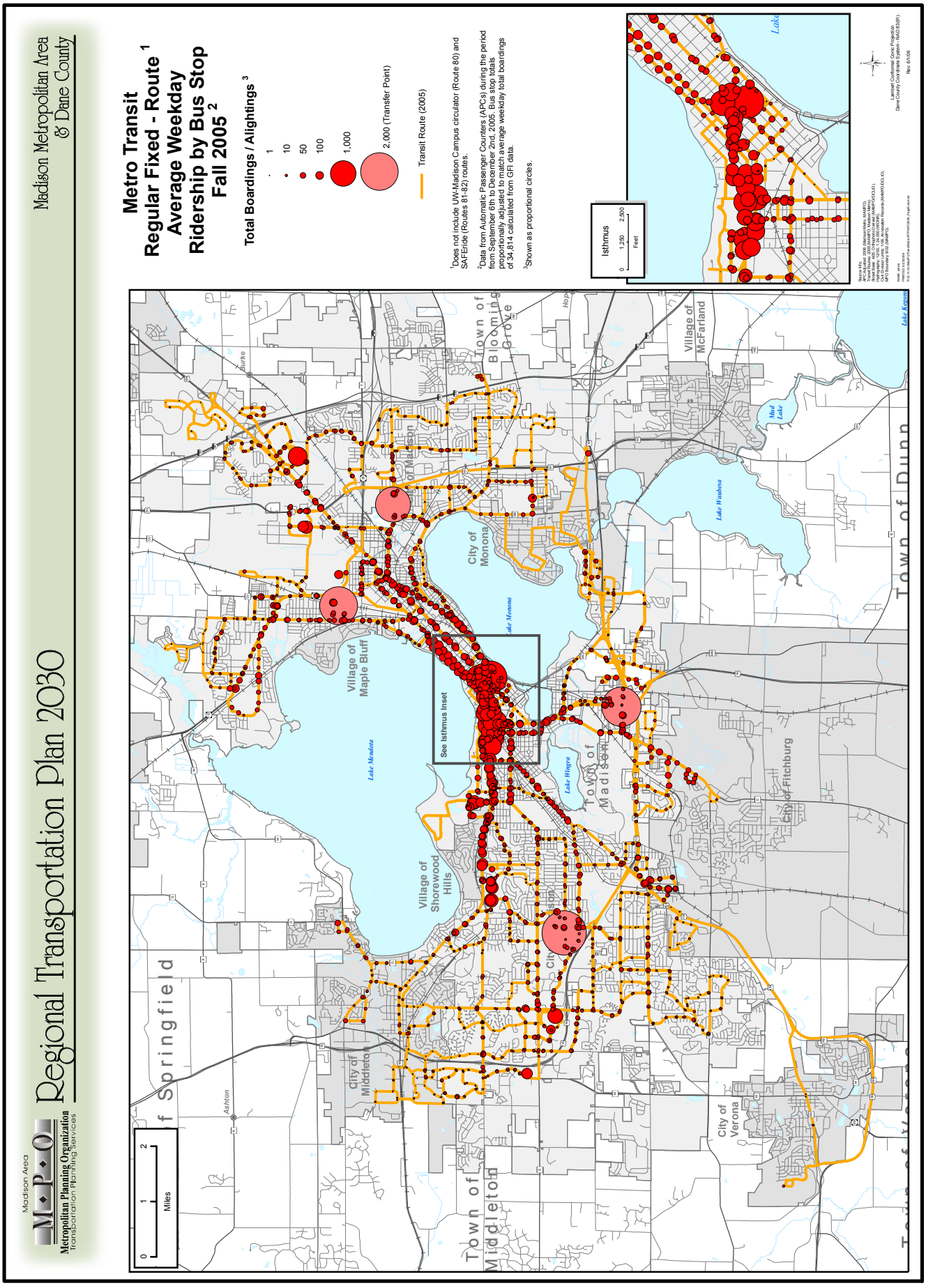
Transit System Characteristics	Year					
	2000	2001	2002	2003	2004	2005
Transit Service Area Population[1]	233,400	233,400	233,400	233,400	233,400	233,400
Transit Service Levels						
Revenue Vehicle Hours Operated	385,072	373,331	363,095	356,137	365,826	364,491
Revenue Vehicle Miles Operated	4,792,120	4,654,434	4,560,152	4,515,478	4,675,185	4,675,350
Number of Vehicles Operated in Maximum Service	166	166	167	167	167	168
Transit Ridership and Service Utilization						
Total Passengers	10,065,495	10,210,834	10,895,089	10,934,125	10,962,345	11,475,597
Passengers per Capita	43.13	43.75	46.68	46.85	46.97	49.17
Passengers per						
Revenue Vehicle Hour	26.1	27.4	30.0	30.7	30.0	31.5
Revenue Vehicle Mile	2.10	2.19	2.39	2.42	2.34	2.45

[1] Based upon 2000 Census data. Updated population figures by small area not available.

Source: Metro FTA National Transit Database (NTD) Reports and Madison Area MPO

With the vast majority of weekday transit trips destined for the downtown/UW-Madison campus areas, ridership is by far the highest in the University Avenue/State Street corridor. The East side corridors through the Isthmus—Johnson/Gorham Street, East Washington Avenue, and Jenifer St./Atwood Avenue—also have very high ridership. The Sheboygan Avenue/Hill Farms area, East and West Towne Malls, MATC, Allied Drive, Monroe Street, and Park/Mills Street Corridor are among other areas with high ridership. Figure 21, on the next page, shows average weekday ridership by bus stop.

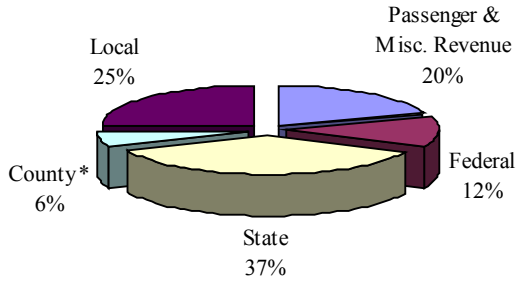
FIGURE 21


Madison Area
M•P•O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area & Dane County
Metro Transit
Regular Fixed - Route [1]
Average Weekday
Ridership by Bus Stop
Fall 2005 [2]
Total Boardings / Alightings [3]
1
10
50
100
1,000
2,000 (Transfer Point)
Transit Route (2005)
[1]Does not include UW-Madison Campus circulator (Route 80) and SAFERide (Routes 81-82) routes.
[2]Data from Automatic Passenger Counters (APCs) during the period from September 6th to December 2nd, 2005. Bus stop totals proportionally adjusted to match average weekday total boardings of 34,814 calculated from GFI data.
[3]Shown as proportional circles.
Isthmus
0
1,250
2,500
Feet
0
1
2
Miles
See Isthmus Inset
Town of Springfield
Town of Middleton
Town of Madison
Town of Dunn
Town of Bloomington Grove
City of Monona
Village of Maple Bluff
Village of Shorewood Hills
Village of McFarland
City of Fitchburg
City of Verona
City of Middleton
Lake Mendota
Lake Monona
Lake Wingra
Lake Wanbesa
Mud Lake
Lake Kegonsa
Ashton
Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83 (91)
Rev. 8/1/06

Metro Service Operating Costs and Revenues

As with all modes of transportation, the cost of public transit service is not paid for by transit users alone, but is supplemented by public funding.[5] In addition to passenger fares, Metro relies on federal, state, and local funding to cover the costs of operating the transit system. The percentage of system costs covered by passenger fare revenue dropped to a low of 17% in 2003 before increasing to 20% in 2005 following recent increases to discounted fares. Increasing paratransit costs have contributed to the drop in the percentage of costs covered by passenger revenue. State revenue has also not kept pace with cost increases due to inflation and the increase in service hours with the transfer point system. The percentage of costs covered by state revenue decreased from 45% in 1996 to 37% in 2005. Metro has made up the difference by allocating more federal capital funding towards operating costs[6], and most recently by increasing local funding. Metro has also been able to work out an arrangement with Dane County to receive pass-through Federal Medicaid funding to support the paratransit system. Figure 22 illustrates the 2005 percentage distribution of operating revenue for the Metro transit system.

FIGURE 22
2005 Metro Transit Operating Revenue Distribution



*County funds consist primarily of pass-through federal MA Waiver Program and state Section 85.21 Program funding.

TABLE 17
METRO FIXED-ROUTE TRANSIT SYSTEM OPERATING COSTS, REVENUE, AND DEFICITS: 2000-2005

System Characteristics	Year					
	2000	2001	2002	2003	2004	2005
Service Expenses and Revenue						
Operating Expenses[1]						
Total Expenses	$28,232,128	$28,637,012	$30,029,568	$30,283,752	$31,732,151	$32,974,246
Cost per Total Vehicle Hour	$65.96	$68.60	$73.63	$75.90	$78.34	$81.33
Cost per Total Vehicle Mile	$5.09	$5.23	$5.59	$5.77	$5.70	$6.08
Cost per Passenger	$2.80	$2.80	$2.76	$2.77	$2.89	$2.87
Passenger Revenue[2]	$5,821,511	$6,308,430	$6,172,079	$5,910,084	$6,295,638	$7,361,203
Revenue per Passenger	$0.58	$0.62	$0.57	$0.54	$0.57	$0.64
Percent of Expenses Recovered Through Passenger Passenger Revenue	20.6%	22.0%	20.6%	19.5%	19.8%	22.3%
Operating Deficit						
Total Deficit	$22,410,617	$22,328,582	$23,857,489	$24,373,668	$25,436,513	$25,613,043
Deficit per Passenger	$2.23	$2.19	$2.19	$2.23	$2.32	$2.23

[1]Excludes interest and depreciation.
[2]Excludes miscellaneous operating revenue (e.g. advertising).

Source: Metro FTA National Transit Database (NTD) Reports and Madison Area MPO.

In 2005, the operating expense per vehicle hour for the fixed-route system was $81.33, a 3.8% increase from 2004. This is considerably higher than peer transit systems, mostly due to higher driver wages and benefits. From 1998 to 2004, the average annual increase in expense per vehicle hour was just over 3% compared to an annual average inflation rate of 2.5%. The cost per fixed-route passenger was $2.87 in 2005, while revenue per passenger was $0.64, a 12% increase from 2004. The increase in revenue per passenger is attributable to the recent fare increases and an increase in the contract rate per trip for the UW-Madison unlimited ride pass program. Table 17 shows operating costs, revenues, and deficits for Metro's fixed-route system from 2000-2005.

[5] A 1994 Highway Cost Pricing Study prepared for WisDOT as part of the Translinks 21 planning process concluded that around 44% of total public roadway expenditures were covered by non-user fees (primarily property taxes) based on a review of 1992 data.

[6] Federal rules allow some operating costs under the category of "preventive maintenance" to be covered with capital funding under the Federal Section 5307 Urbanized Area Formula Program. This includes all direct costs, including labor costs, associated with maintaining vehicles and facilities.

Transit Service Needs

The Madison area has an excellent and well-used transit system, comparing very favorably to systems in similarly sized areas as well as peer transit systems with similar service levels. However, there are still unmet needs, particularly in some of Madison's peripheral neighborhoods and in suburban communities. These include:

- Improved UW-Madison campus service, including direct service from the South and West Transfer Points and a better connection between the campus route and regular city routes.

  Ridership by UW students and employees has increased significantly in recent years due to the university's unlimited ride pass program, an increase in parking costs, and other transportation demand management (TDM) activities. UW students and employees now account for well over 1/3 of system-wide ridership on Metro's regular routes.

  Campus service improvements implemented in August 2006 include: (1) addition of a new South Campus Loop (Route 85) connecting new dormitories and offices to other campus areas; (2) a new direct connection from the West Transfer Point into campus through new Route 11; and (3) a new direct connection from the South Transfer Point into campus via new Route 44. Park-and-ride service from the Villager Mall on Park Street was eliminated, however.

- Improved and additional limited-stop commuter service to downtown/UW campus from peripheral neighborhoods and suburban communities.

  Only a few routes provide limited-stop service for a significant portion of the route. As a result, travel times from many neighborhoods are 45 to 50 minutes or longer, more than twice the time of driving.

  Service improvements implemented in August 2006 include service modifications for Routes 12, 14, 15, and 47, which will result in faster, more direct commuter service. Service between Middleton and Madison was also improved. Route 5, a core route, was modified to provide 45-minute vs. 60-minute service between the South and East Transfer Points. Addition of new commuter service from suburban communities such as Sun Prairie, Oregon, and Monona could provide an opportunity for adding more limited-stop service in the future. Metro has been working with several suburban communities to explore potential routed commuter service.

  The Transport 2020 (East-West Transit Corridor) Study, which is in its second Draft Environmental Impact Study/ Preliminary Engineering phase, is evaluating the costs, benefits, and impacts of a high-capacity transit system (most likely some type of rail) on dedicated right-of-way in the east-west corridor. The corridor runs from the airport and East Towne on the North and East sides to Middleton and West Towne on the West side. All of the alternatives being considered include supplemental express bus service. In addition to developing more detailed plans for the alternative improvements (route, stations, operating plans) and selecting a preferred alternative, the study will also identify funding and management mechanisms. A new funding source would be required to fund both the capital and operating costs for such a system. The outcome of the study will be an application for Federal New Starts funding for the recommended alternative.

- Additional park-and-ride facilities and service.

  Construction of a park-and-ride lot at the East Transfer Point is planned for 2006-2007.

- New or improved service to peripheral employment centers in Middleton, Fitchburg, and the American Center on Madison's Northeast side.

  Some of these employment centers have either very limited service or no service at all. Improvements have been made in the last two years. Commuter service to Epic System's new campus on the West side of Verona was added in 2005. The initial service consists of three limited-stop express a.m. and p.m. trips between the site and the West Transfer Point (WTP). Service to the West side employment centers was just improved in August 2006. Service was extended to Middleton's developing Discovery Springs and Airport Road Business Parks with direct service from the WTP. More frequent off-peak service was provided between Old Sauk Trails Office Park and the WTP. Middleton service was redesigned to provide transfer opportunities at three different locations, connecting the employment centers with the City's residential neighborhoods east of USH 12 and downtown Madison. Commuter service was also extended down to the Fitchburg Center.

- New or improved off-peak and weekend service in some neighborhoods and communities (e.g., South side, Middleton, Monona).

  Off-peak service frequency between Middleton and downtown Madison was increased from 90 to 60 minutes as part of the August 2006 service improvements. Service was removed on Monona Drive north of Pflaum Road as part of implementation of the South to East Transfer Point (ETP) connecting route.

- Improved off-peak and weekend service frequency in some areas and corridors leading to the downtown/UW campus area.

  Off-peak service on the South side (e.g., Southdale), including the Fish Hatchery Road and Park Street corridors, could be improved. The South side has several neighborhoods with higher concentrations of transit-dependent persons. The August 2006 service changes eliminated service from some street segments on the South side, but added connecting service to the East Transfer Point. Peak period service on Fish Hatchery Road was improved with Route 47 no longer alternating between Park Street and Fish Hatchery Road. Regent Street and Mineral Point Road are other corridors that should be considered for higher frequency service.

  Frequency of weekend service along the Jenifer and Johnson Street corridors was increased through improved bus phasing as a result of use of an offset pulse at the ETP implemented in August 2006. Weekend service frequency on Monroe Street and Odana Road was reduced from 30 to 60 minutes, however.

- Improved pedestrian access to the transit system.

  Pedestrian facility improvements (sidewalks, curb ramps, improved street crossings, etc.) are needed in a number of areas around bus stops. Many bus stops lack concrete bus pads with connections to the sidewalk. This is particularly problematic for persons using wheelchairs and others with a mobility limitation.

- Local shared-ride taxi service in more suburban communities (e.g., Verona, Oregon).

  Such service is a cost-effective way to address the mobility needs of persons without a car in smaller communities that cannot support fixed route service. The service can also be used as a "feeder" service to Metro's fixed route system. The Village of Oregon is considering setting up a shared-ride taxi system.

Metro's Major Transit Capital Needs

- Replacement and expansion of the fixed-route and paratransit bus fleets
- Renovation and expansion of Metro's administration, operations, bus storage, and maintenance facility
- Renovation of the State Street Transit Mall
- Bus shelters and other bus stop amenities

Bicycle Transportation

Introduction

Bicycling is an important mode of transportation and is also a healthful recreational activity that is available to people of all ages and socioeconomic levels. For around 8% of City of Madison residents aged 18 or older, the bicycle is their primary mode of transportation, according to a 2004 City of Madison Health Department telephone survey of adult residents. Bicycling Magazine recently designated the City of Madison as the most bikeable city in the country among cities in the 200,000-to-500,000 population range.

Bicycling is an efficient and convenient mode of transportation that, like the automobile, provides a high degree of independence, flexibility, and freedom of choice relative to schedule and destination. Door-to-door travel times are comparable to the automobile for short trips up to three miles, particularly in the downtown and UW-Madison campus areas where parking adjacent to buildings is limited. Bicycling levels are much higher during the warmer weather months, but many people bicycle all year long.

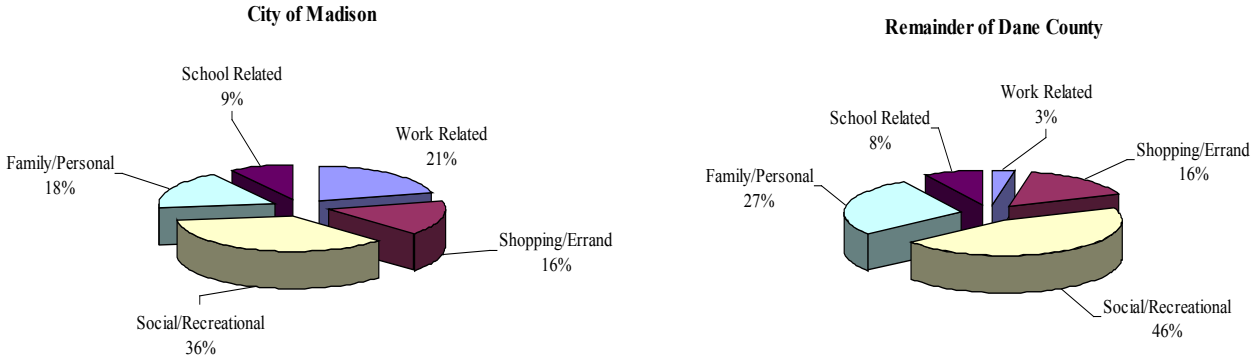
Census data and bicycle traffic counts in the City of Madison show that bicycling levels continue to increase as the growing and increasingly interconnected bikeway network in the region makes bicycling more convenient and enjoyable.

Bicycle Travel

Bicycle trips accounted for around 2.4% of all average daily person trips in the City of Madison and 1.0% of person trips in the rest of Dane County, according to a special county add-on sample of the 2001 National Household Transportation Survey (NHTS). The average length of bicycle trips was 3.4 miles for all trips countywide.

Figure 23 shows the distribution of trip purposes for bicycle trips in the City of Madison and the rest of Dane County. Social/recreational trips made up a much higher percentage of bicycle trips than for all person trips, accounting for 36% of City trips and 46% of trips in the rest of the county compared to 19% of all person trips countywide. Work trips accounted for 21% of bicycle trips in the City versus just 3% of bicycle trips in the rest of the county.

FIGURE 23
TRIP PURPOSE DISTRIBUTION FOR BICYCLE TRIPS



In 2000, over 3,800 or around 3.2% of City of Madison workers commuted to work by bicycle, according to U.S. Census figures.[7] This was a 7.6% increase from 1990. Around 7.1% of workers residing within the greater Isthmus area[8] bicycled to work in 2000. Around 400 or 0.3% of workers in the rest of Dane County (excluding the City of Madison) commuted by bicycle.

[7] It should be noted that census data is collected during the last week of March when bicycling levels are lower compared to the warmer weather months. Actual bicycling levels are also probably underestimated by the census due to the fact that the data only identifies a person's primary mode of transportation. Many persons drive or use transit the majority of time to work, but still regularly bicycle during good weather. Some persons also drive to a close-in location and bicycle to work from there.

[8] Includes the area bounded by University Bay Dr., Franklin Ave., and Glenway St. to the west, Haywood Dr. to the south, and Commercial Ave. and Starkweather Creek to the east (Census Tracts 9-12, 16.01, 16.02, 17.01, 18, 19 and part of 20 and 21).

The University of Wisconsin (UW) – Madison Transportation Services Department conducts a biannual transportation survey on student and faculty/staff commuting habits and attitudes. According to the March 2005 survey, around 16% of students, 12% of staff/faculty, and 10% of UW Hospital & Clinics employees bicycle to campus in good weather. For UW staff/faculty residing in the City of Madison, 20% bicycle to campus. For all persons working in either the UW campus or downtown area, around 5% bicycled to work according to the 2000 U.S. Census.

As is the case of walk trips, the much higher percentage of bicycle trips by City of Madison residents and for those residing or working in the greater Isthmus area can be attributed in large part to the more compact, mixed-use development pattern and the extensive bicycle facility network in the Madison area. The cost of parking in the UW campus and downtown areas also likely contributes to the higher numbers of bicycle commuters.

The City of Madison collects bicycle path traffic counts from 24-hour detection devices placed in paths at several street intersection locations and in the contra-flow bike lane on University Avenue at Mills Street. Table 18 shows average weekday bicycle traffic at these locations for the latest year for which complete data is available. Bicycle traffic on the John Nolen Path has increased 42% from 1997 to 2004, while traffic on the University Avenue bike lane has increased 89% from 1995 to 2003. The East Rail Isthmus Path has also seen a significant increase in use between 1999 and 2003—the first and last years a full year of data is available—growing 26% during this time. A partial set of data for 2004 shows that use of the path has continued to grow.

The Wisconsin Department of Transportation (WisDOT) sponsored a statewide multi-use path/trail use study with counts by time of day and user characteristics data recorded at locations along ten selected higher use paths and along a roadway from 2003 to 2005[9]. The study locations included three in Dane County—the Southwest Commuter Path near the Breese Terrace intersection, the Capital City Trail (E-Way Segment) at the Fish Hatchery Road intersection, and STH 19 at the Kingsley Road intersection in Waunakee. Table 19, on the next page, shows the number of bicyclists and pedestrians at these locations and the dates and times the data was collected. The vast majority of bicyclists using the Southwest Path near the UW-Madison campus on two different weekdays were categorized as either "commuter/utilitarian" (52%) or "generic" (41%), while just 7% were categorized as "racing cyclists." The breakdown for Capital City Trail users was 12% commuter, 67% generic, and 21% racer on a weekday and 83% generic and 17% racer on a Saturday. The breakdown users at the STH 19 location in Waunakee on a Saturday was 5% commuter, 51% generic, and 44% racer.

TABLE 18
CITY OF MADISON BICYCLE TRAFFIC COUNTS

Path/Location	Year	Number of Bicyclists on Average Weekday		
		Annual Avg.	April – Oct.	Nov. – March
Brittingham Bay @ West of North Shore Dr.	2004	352	481	171
East Rail Isthmus @ Yahara River Bike Bridge	2003	629	888	266
John Nolen Drive @ East of North Shore Dr.	2004	955	1,358	389
John Nolen Drive @ Bridge SW of North Shore	2004	746	1,051	318
Wingra Creek @ Park Street	2000	206	295	81
University Ave. Contra-Flow Bike Lane @ Mills Street	2003	6,688	8,843	3,670

Source: City of Madison Traffic Engineering Division

[9] Wisconsin Bicycle and Pedestrian Trail Use Study, Research Report 2005-3, Traffic Operations and Safety Laboratory, UW-Madison Dept. of Civil and Environmental Engineering, sponsored by WisDOT, November 2005.

TABLE 19
BICYCLE/PEDESTRIAN TRAFFIC AT SELECTED MADISON AREA LOCATIONS
(FROM WISCONSIN TRAIL/PATH USE STUDY)

Path/Location	City/Village	Usage	Date	Time Period of Counts
Southwest Path (west of Breese Terrace)	Madison	980 (171 ped) 160 (30 ped)	8/29/03 (Fri.) 9/2/03 (Tues)	8 a.m. to 8 p.m. 5:30 a.m. to 8 a.m.
Capital City Trail (Fish Hatchery Rd. intersection)	Fitchburg	441 (77 ped) 745 (111 ped)	6/29/04 (Tues.) 8/14/04 (Sat.)	5:30 a.m. to 8:30 p.m. 5:30 a.m. to 8:30 p.m.
STH 19 (Kingsley Rd. intersection)	Waunakee	41 (3 ped)	8/21/04 (Sat.)	6 a.m. to 8 p.m.

Source: WisDOT

Existing Bicycle Facilities in Dane County

The Madison area has an extensive network of bicycle facilities that has been developed over the last few decades. Regional and City of Madison policies have supported the inclusion of bicycle facilities as part of roadway construction and reconstruction since the first Madison area bicycle plan was adopted in 1975. Funding for independent bicycle projects increased substantially in the early 1990s when the landmark Federal transportation legislation, the Intermodal Surface Transportation Efficiency Act (ISTEA), created a dedicated program for local bicycle, pedestrian, and other "transportation enhancement" projects. This has greatly accelerated the pace of development of major multi-use paths and bicycle/pedestrian over- and underpasses in the Madison area.

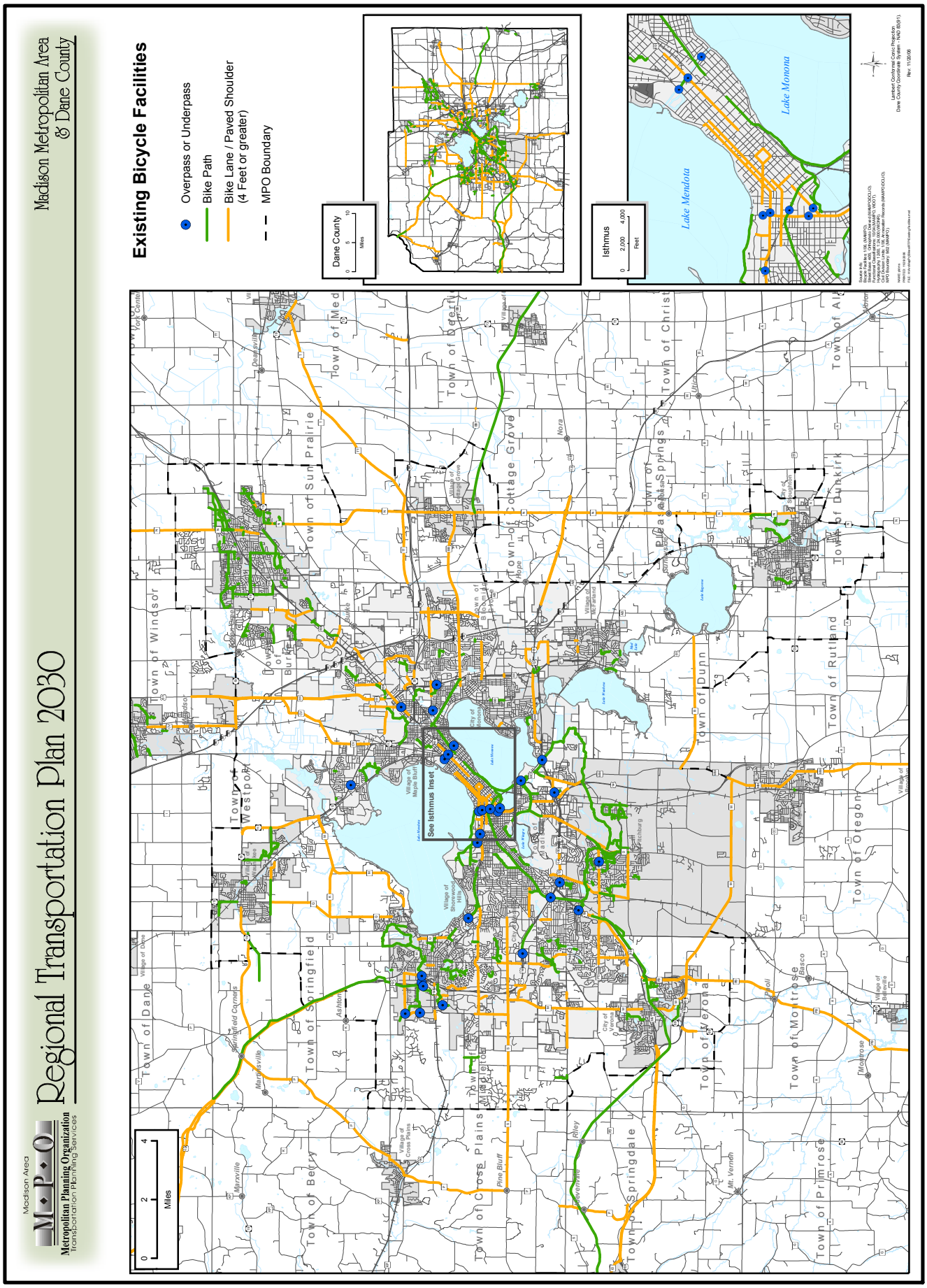
There are currently about 47 miles of on-street bicycle facilities (bike lanes, paved shoulders) in the City of Madison and 263 miles in all of Dane County. Major local arterial streets in the Madison area with bike lanes include: Johnson and Gorham Streets; University Avenue (through UW campus); Mineral Point Road; Old Sauk Road; Fish Hatchery Road; portions of Park Street; portions of Gammon Road; Seminole Highway; and North Thompson Drive. Bike lanes are being added to East Washington Avenue as it is being reconstructed from Blair Street to Thierer Road with two of five segments already completed. Bike lanes will also be added to Monona Drive as part of reconstruction planned to start in 2008.

There are currently over 42 miles of bike paths and trails in the City of Madison and 151 miles in all of Dane County. Major paths constructed in the past ten years include: Starkweather Creek Path (Shopko Dr. to MATC); Capital City Trail (E-Way and Verona Road segments); Wingra Creek Path; Southwest Commuter Path; Blackhawk Path, reconstruction of the west end of the UW-Madison Campus Path; Marsh View/East Branch Creek Path; USH 12 Corridor Path; and Pheasant Branch Trail. A number of important pedestrian/bicycle over- or underpasses have also been built during this time.

Signed bicycle routes are not a bicycle facility per se, but a shared roadway or multi-use path that has been designated by signing as a preferred route for bicycle use. The purpose of a bicycle route system is to highlight for way-finding purposes reasonably direct routes through the urban area on either paths or streets that most bicyclists will feel comfortable using. Routes are located to provide access to major bicyclist destinations such as schools, parks, and employment centers. The City of Madison has an extensive signed route system that covers a portion of the City of Monona. The City of Fitchburg also has a recently signed route system and other communities such as the Cities of Middleton and Stoughton are in the process of developing them. There are currently 114 miles of signed bike routes in the City of Madison and 149 miles in Dane County.

Figure 24, on the next page, shows existing bicycle facilities and signed bicycle routes in Dane County.

FIGURE 24

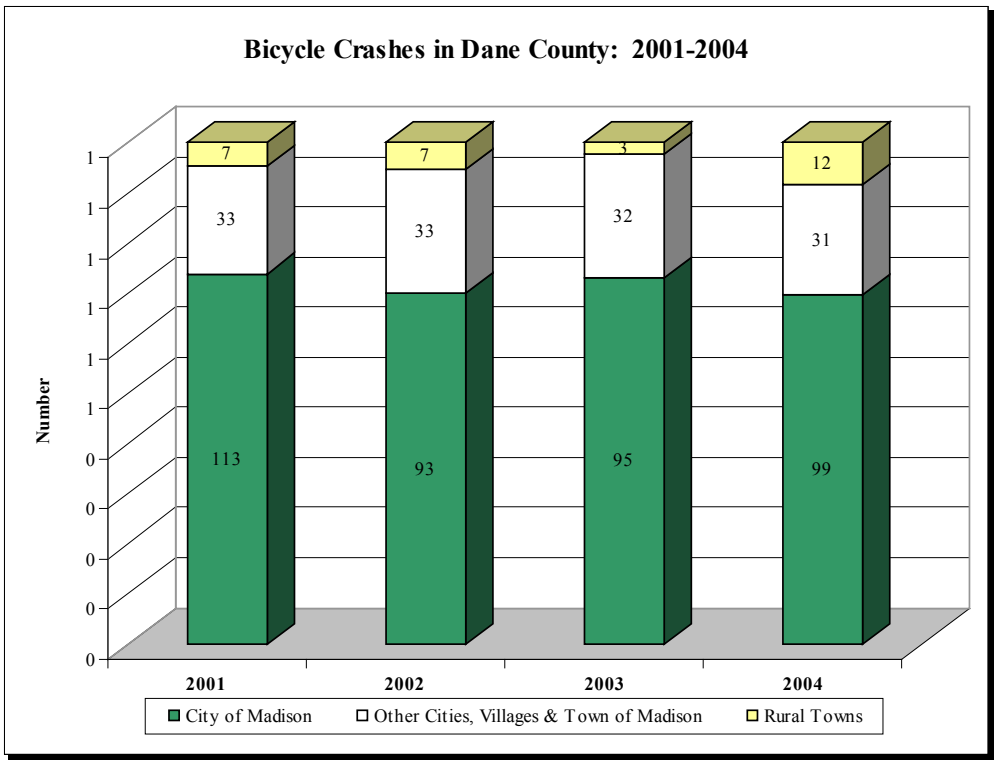

Madison Metropolitan Area & Dane County
Regional Transportation Plan 2030
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Existing Bicycle Facilities
Overpass or Underpass
Bike Path
Bike Lane / Paved Shoulder (4 Feet or greater)
MPO Boundary
Dane County
Isthmus
Lake Mendota
Lake Monona
See Isthmus Inset
Miles
Feet

While the bicycle facility network in the Madison area is extensive, there are still missing links in the network and barriers that bicyclists face in certain corridors. In addition, better commuter routes need to be developed connecting some of the suburban communities with the central Madison area.

Bicyclist Safety Data and Education

Countywide from 2001-2004, there was an average of 140 bicycle crashes annually involving a motor vehicle that resulted in an injury, fatality, or property damage. There were a total of four fatalities during the four-year period. Figure 25 shows the number of crashes during this time in the City of Madison, other larger cities and villages, and small villages or towns. In the City of Madison, the annual number of crashes has dropped from a high of around 340 in 1985 to 99 in 2004 despite increasing bicycle use. Part of the decrease in the number of crashes, however, can be attributed to a reduction in the threshold for reporting crashes from $200-$500 to $1,000 in property damage. The Madison Police Department also stopped reporting crashes not involving a motor vehicle. There has also been a downward trend in bicycle crashes statewide since the 1980s.

FIGURE 25



Note:
Includes crashes involving fatality, injury, and property damage. The vast majority were injury crashes. There were no fatalities in 2001, two in 2002, none in 2003, and two in 2004.

Source: WisDOT

Bicyclists aged 20-44 are involved in the majority of bicyclist/motorist crashes in the City of Madison, reflecting the high level of adult bicycle usage in the city. They accounted for 60% of the crashes in 2003. Bicyclists aged 10-24 are over-represented in terms of the number of reported crashes they are involved in compared to their percentage of the population. They accounted for 51% of the crashes in 2003, but account for only around 29% of the population according to the 2000 Census. Statewide, children under age 16 account for the majority of bicyclist/motorist crashes.

Turning, merging, and crossing movements at intersections, driveways, and other junctions account for the vast majority of all bicyclist/motorist crashes, particularly in urban areas. The most common types of crashes in the City of Madison in 2002-'03 were: right angle at intersection (43%); left turn/through – opposite direction (21%); and angle crash at mid-block (e.g., entering or leaving driveway) (14%). Sideswipe – same direction crashes accounted for 5% of bicycle-motor vehicle crashes. While the vast majority of bicyclist/motor vehicle crashes occur in urban areas, a much smaller percentage of the severe injuries and fatalities occur in such areas due to the lower speeds on urban streets.

In adult bicyclist/motorist crashes, both national and local data indicate that the motorist is the one who most often makes the critical error. Failure to yield by the motorist is the most common error. In 2002-'03, this factor was involved in 37% of the crashes while the motorist being inattentive was the main factor in another 9% of crashes. The bicyclist's failure to yield or disregard the traffic signal was the main factor in 14% of the crashes.

In child bicyclist/motorist crashes, the child bicyclist is most often the one who makes the critical error. The most common type of crashes are: bicyclist mid-block ride-out; bicyclist ride-out at uncontrolled intersection; and bicyclist makes unexpected turn or swerves into traffic.

Riding on the sidewalk is not as safe as people generally perceive it to be and may even have a higher rate of crashes per bicycle-mile than roadway bicycling. A detailed study of City of Madison crash data from 1987-1990 found that 30% of all crashes occurred on sidewalks or within crosswalks with almost three-quarters of these occurring while the bicyclist was riding against the flow of traffic in the adjacent street. Other studies around the country have confirmed the greater risk of traveling on a sidewalk, particularly when riding against the flow of traffic.

Bicyclist/motorist crashes in the City of Madison are concentrated in the UW-Madison campus area (particularly along University Avenue and Johnson Street) where bicycle usage is highest, there is a high level of motor vehicle traffic congestion, and there are many intersections and other conflict points.

The studies on bicyclist/motorist crashes show that bicyclist and motorist education and training is very important to efforts to improve bicyclist safety. Bicyclists need to be taught how to properly ride in traffic and motorists need to be taught how to operate with and be more attentive to bicyclists.

The City of Madison has a pedestrian and bicycle safety program with a full-time Bicycle/ Pedestrian Safety Educator who teaches basic safety skills to elementary children at the public schools and local agencies. The Madison Area MPO supports this position through an annual allocation of its Federal Surface Transportation Program (STP) – Urban funding. The City's Bicycle/Pedestrian Coordinator advocates for bicyclists by working with the City of Madison and other area planning and transportation agencies to improve bicycle facilities and increase their safety.

The UW-Madison Transportation Services Department employs a full-time Bicycle/Pedestrian Coordinator to provide bicycle safety education and encouragement. The coordinator offers courses, distributes maps and other materials, and advocates for bicyclists on campus. A WisDOT grant in 2003 enabled the university to implement a Bike Ambassador Program in which students are hired to raise awareness of bicycle and pedestrian safety through various activities, including tours and skills workshops.

The WisDOT Bureau of Transportation Safety administers a pedestrian/bicycle education and enforcement reimbursement program, offers a variety of bicycle safety education courses, publishes a number of bicycle safety education materials, and conducts other educational activities. The City of Madison, other communities, and the Bicycle Federation of Wisconsin assist in distributing the educational materials. WisDOT also plays an important role in educating drivers through its driver licensing responsibility, including publishing of the Motorist's Handbook.

The Bicycle Federation of Wisconsin (BFW), American Automobile Association (AAA), and other area organizations and health agencies conduct a variety of other bicycle safety activities, including educational programs, training courses, and distribution of materials. The BFW offers classes, organizes the annual Bike to Work Week event, and conducts numerous other promotional activities. Through a grant, BFW conducted a major educational program throughout the county that included motorist as well as bicyclist education. A coalition of organizations, including BFW and the Safe Community Coalition, is currently conducting a program that will include law enforcement training, overtime grants for enforcement of bicycle-related laws, children's "pre-driver education" training, television PSAs, and billboards.

Existing Bicycle Plans and Bicycle-Related Policies

Regional Bicycle Transportation Plan

The Madison Area MPO prepared a comprehensive regional bicycle plan in 2000. The Bicycle Transportation Plan for the Madison Urban Area and Dane County was adopted by Dane County and the City of Madison as well as the MPO. It provides a blueprint for continuing to improve bicycling conditions and safety and increasing bicycling levels.

The plan covers the "four Es" of engineering (facility improvements), education, encouragement, and enforcement. It includes a vision statement, three broad goals, and detailed objectives and recommendations within the following categories:

- Bicycle facilities planning and development
- Bicycle facilities maintenance
- Support facilities and transit connections
- Education and encouragement
- Enforcement

The most important objective is to integrate the consideration of bicyclists' needs into the community and neighborhood planning and development plan review processes, and local and state agencies' planning, design, and operation of transportation projects and programs.

The bicycle transportation plan identifies and prioritizes on-street bicycle facility (bike lane/paved shoulder) needs and proposed off-street paths/trails for the Madison urban area and rural Dane County. It also identifies recommended bicycle routes for the Madison urban area and routes connecting communities and parks within the county. On-street facility improvement needs were based on an analysis of the compatibility for bicycling on arterial and collector roadways in the Madison urban area and rural Dane County. Proposed off-street facility improvements were based on:

- The need to provide alternative and/or more direct connections to desired destinations (e.g., where suitable on-road alternative does not exist).
- The need to cross barriers, mostly freeways or high-volume arterial roads.
- Available opportunities for paths/trails such as in rail and open space/environmental corridors.

The proposed on- and off-street bicycle facility improvements were prioritized based on a set of criteria focused primarily on the extent to which the facility improves mobility and accessibility in regional travel corridors and on anticipated use.

As part of this regional transportation plan update, an updated countywide bikeway system plan and an updated list of high priority regionally significant off-street bicycle facility projects have been prepared (See Bicycle Transportation Recommendations on page 151).

The 2000 bicycle transportation plan also includes detailed design guidelines for bicycle facilities in an appendix. Issues covered by the design guidelines include:

- Types of bicycle facilities
- Wide streets with low parking occupancy
- Bicycle boulevards
- Bike lane treatments at intersections
- Retrofitting streets with bike lanes
- Traffic signals
- Traffic calming - considerations for bicyclists
- Bicycle parking

The guidelines primarily follow the national AASHTO guidelines, but go beyond these in some cases and also address some issues that aren't addressed or are not addressed in sufficient detail. These guidelines provide a valuable reference for local planners and engineers.

Madison Area MPO Policies Supporting Bicycle Transportation

The Bicycle Transportation Plan for the Madison Urban Area and Dane County prepared and adopted by the Madison Area MPO includes specific objectives and recommended actions by the MPO, WisDOT, Dane County, and local jurisdictions for achieving the goals of the plan to provide safe, convenient, and enjoyable travel by bicyclists, increase bicycling levels, and reduce bicyclist crashes.

One of the most important ways in which the Madison Area MPO supports bicycle transportation is through its criteria for selecting projects to be funded with Federal Surface Transportation Program (STP) – Urban funds. The STP provides flexible funding that can be used for a wide variety of transportation projects. A portion of STP funds, called STP – Urban, is designated for urban areas. Large urbanized areas (population over 200,000) such as Madison receive a direct apportionment of funds. In 2006, the Madison urban area received $6.2 million. Federal rules provide MPOs with the responsibility to coordinate and approve priority project listings for use of these STP – Urban funds.

The Madison Area MPO's scoring criteria for selecting STP – Urban projects from applications submitted by local units of government in the urban area and Dane County favors multi-modal projects and those that support the region's goals of compact land use and environmental preservation. Projects that include accommodations for bicyclists, pedestrians, and/or transit users, have a high degree of multi-modal use, support compact land use, and reduce environmental impacts of the transportation system receive extra points and are thus more likely to be funded. As a result, almost all of the roadway construction and reconstruction projects that have been funded through the STP – Urban have included bike lanes. In addition, the Madison Area MPO has as a matter of policy agreed to utilize a portion of these funds each year ($53,000 in 2006) to support the City of Madison's Bicycle and Pedestrian Safety Education Program.

MPOs also play a central role in the selection of Federal Transportation Enhancements (TE) Program projects in urban areas as part of WisDOT's Multi-Modal Improvement Program. The TE program is designed to fund projects that increase multi-modal transportation alternatives and enhance communities and the environment. A state review committee recommends TE projects for funding for approval by the WisDOT Secretary from local applications. However, MPOs are asked to prioritize projects within their planning areas and the state committee generally follows the MPO priorities. The Madison Area MPO's criteria for prioritizing TE projects emphasizes regional mobility and accessibility and therefore strongly favors bicycle projects.

State Bicycle Plan

WisDOT completed the first comprehensive state bicycle plan in December 1998 called the *Wisconsin Bicycle Transportation Plan 2020*. The plan establishes WisDOT goals, objectives, and policies or action statements regarding the provision of bicycle accommodations on state roadways and state-supported roadways and covering the other "E's" of education, enforcement, and encouragement. The plan also includes advisory objectives and policies for local roadways. The plan includes separate intercity and urban/suburban elements and is primarily policy-oriented, but it does include recommenda-

tions for seven key inter-city trails, including the Madison-to-Belleville Rails-to-Trails corridor. WisDNR is in the process of designing and developing a bike path/trail in this corridor.

WisDOT Policies Supporting Bicycling

WisDOT has established a vision to "establish bicycling as a viable, convenient, and safe transportation choice throughout Wisconsin" and has established a policy that bicyclists' needs should be considered in virtually all transportation projects. WisDOT recently adopted a Community Sensitive Design (CSD) program that reinforces this vision and calls for greater citizen participation and additional flexibility in roadway design standards. For projects designed under CSD, it is assumed that bicycle and pedestrian accommodations will be incorporated. Procedure 11-45-10 of the WisDOT Facilities Development Manual indicates specifically that bicycle facilities are to be provided on state roadways when the roadway is on an officially designated bike plan or 25 or more bicycle trips a day are anticipated during the peak season and the current motor vehicle traffic volume on the roadway exceeds 1,000 vehicles a day.

In 2004, WisDOT published the *Wisconsin Bicycle Facility Design Handbook*, which describes and illustrates specific design features and approaches for accommodating bicyclists both on- and off-road. The handbook is comprehensive, covering basic roadway improvements, bicycle lanes, and shared-use paths. Topics covered under basic roadway improvements include street network design, pavement quality, intersection sight lines, railroad crossings, traffic signals, structures, and traffic calming.

Dane County Policies Supporting Bicycling

It is the policy of the Dane County Highway & Transportation Department to provide paved shoulders (4- to 5-feet wide where possible) on all rural county trunk roadways with an average daily traffic of 1,000 vehicles or more when they are resurfaced or reconstructed. For improvement projects on county roadways through or adjacent to cities and villages, the county has a policy to share in one-half of the costs of a widened roadway section or bridge available for bicycle use. The department also supports bicycling through its "Bicycle Paths" grant program, which funds bicycle projects by local municipalities. A total of $65,000 was available in 2006. A 25% local match is required and no more than 50% of the total available funds may be allocated to any one municipality. The department also financially supports the printing of the Dane County Bicycle Map prepared by Madison Area MPO staff.

Local Bicycle Plans

The Cities of Middleton and Fitchburg and the Village of Wanaukee and Town of Westport have adopted comprehensive bicycle and pedestrian plans for their communities. Many other communities have bicycle elements in the transportation sections of the local "smart growth" comprehensive plans that they have prepared or are in the process of preparing. The Madison Area MPO has worked with City of Madison staff to prepare a detailed bicycle facilities plan for the West Side and a similar effort is planned for the East side. Local bicycle plans are particularly important for identifying intra-neighborhood connections, inter-neighborhood street connections in developing areas, and other local issues that are beyond the scope of the regional bicycle plan.

U.S. Department of Transportation Policy on Accommodating Pedestrian and Bicycle Travel

It is Federal transportation policy to promote the increased use and safety of bicycling and walking as transportation modes. Federal legislation and regulations require that the safe accommodation of non-motorized users be given due consideration in state and regional transportation plans and during the development and construction of all Federal-aid transportation projects (For more information on this policy, see the Pedestrian Transportation section of the plan at page 79).

Issues

Accommodating Bicyclists on Roadways

Off-street multi-use paths are a very important and popular supplement to the Madison area and countywide bikeway system. However, roadways must still serve as the backbone for the bikeway system. The roadway system already exists and most destinations that bicyclists want to reach are located along it, thus it presents the greatest opportunity for improving bicyclists' mobility. Bicyclists can use local streets with low traffic volumes and slow speeds without the need for special accommodations. However, to safely accommodate bicyclists on busier collector and arterial roadways, appropriate facilities must be provided. Bicycle lanes are the preferred facility in urban areas. Providing bicycle facilities on collector and arterial roadways is critical because they:

- Serve mobility needs by providing the most direct, continuous routes;
- Provide convenient access to the many destinations located on them;
- Are protected from minor street cross traffic by traffic controls;
- Provide controlled crossings of other major roadways; and
- Bridge obstacles such as expressways and railroad tracks.

Street and Intersection Design

An interconnected street system is the most important design feature for bicyclists. This provides direct routes to destinations and alternatives to travel on high-volume, higher speed roadways. Streets that parallel arterials make excellent bicycle routes. A highly connected street system also spreads motor vehicle traffic over a large number of streets, minimizing the need for multi-lane (especially six-lane) roadways with large complex intersections that serve as major barriers for bicyclists and pedestrians.

Intersection design is also very important since this is where most conflicts and crashes occur between the various roadway users. Where possible, bike lanes should be carried through to the intersection, creating space and a travel path for bicyclists that is direct, logical and as consistent as possible with the path of motor vehicle traffic. A network of streets with bike lanes does not fully meet bicyclists' needs if intersections present obstacles.

Care must also be taken to ensure good visibility at intersections. If sight lines are blocked by vegetation, fences, or other obstructions, motorists may not be able to see bicyclists and vice versa. This is a particular issue for child bicyclists.

Conducive Community Development Patterns and Site Design

A more compact pattern of development with mixed-use neighborhood and community activity centers and buildings oriented to the street provides destinations within easy bicycling distance of people's homes and workplaces. A network of slower speed streets and paths connecting the different land uses provides direct and attractive bicycle routes. Managing access on arterial streets through limiting and consolidating driveways and use of medians is also important in reducing the number of conflict points between turning motor vehicles and bicyclists riding on the roadway.

Eliminating Barriers and Hazards

Freeways, other major, multi-lane roadways, bridges without bicycle accommodations, large, complex intersections, and interchange areas are examples of major barriers to bicyclist circulation. Solutions need to be identified to overcome or reduce them. Opportunities for building non-interchange street crossings and pedestrian/bicycle over- or underpasses of freeways should be identified so options are not foreclosed in the future. While interchanges will always provide a lower level of service for bicyclists than non-interchange crossings, they can still be designed to better accommodate bicyclists and pedestrians (e.g., avoiding free-flow movements).

Demand-actuated traffic signals that don't detect bicyclists or signals that don't allow sufficient green time for bicyclists to clear large intersections can also create problems for bicyclists. Bicycle-sensitive loop detectors should be used and bicyclists considered in the timing of signals.[10] At-grade railroad crossings can create hazards if the road surface is not at the same elevation as the rail tracks and/or bicyclists are unable to cross the tracks at a right angle. Improperly designed and/or located drainage grates are another common hazard for bicyclists.

[10] A state law was recently adopted that allows bicyclists facing a red signal to proceed cautiously through the intersection after wating at least 45 seconds if the bicyclist believes the signal is actuated but is unable to detect bicycles. However, the best and safest solution is to install bicycle-sensitive detectors.

Maintenance of Bicycle Facilities

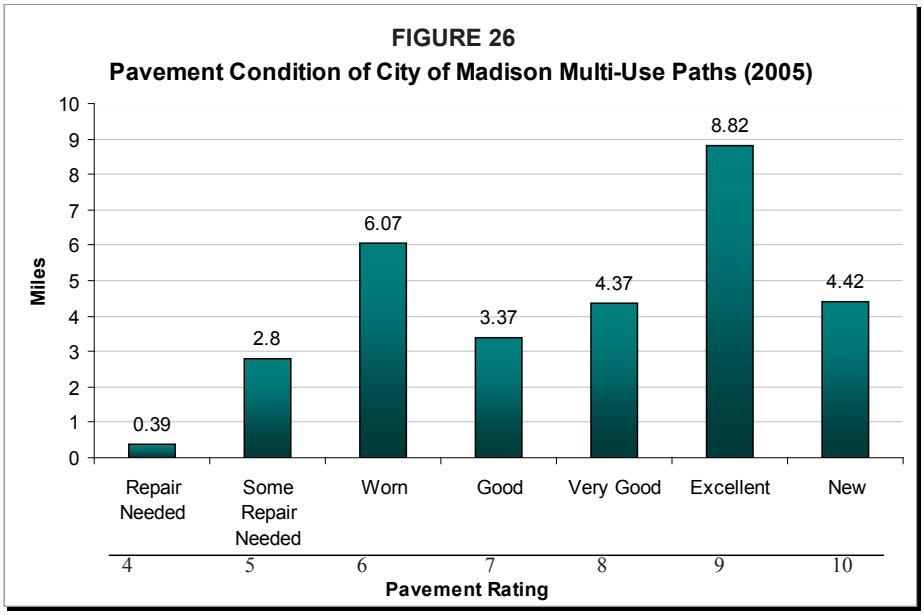
Pavement quality and smoothness is an important issue for bicyclists. Bicycles ride on two narrow, high-pressure tires and have no suspension, so deteriorated surfaces with holes, bumps, or large cracks can create hazards for bicyclists. To the extent practicable, pavement surfaces should be kept free of such irregularities.

The City of Madison Engineering Department recently conducted an inventory of the pavement condition of the City's multi-use paths, which is illustrated in Figure 26. A total of 17.6 miles of path or 58% is rated 8-10 meaning the path is new and requires no maintenance. Another 9.4 miles or 31% is rated 6-7 meaning minor maintenance (e.g., crack filling) is required. The City initiated a path maintenance program in 2006 to extend the life of paths, delaying the need for reconstruction.

Street and path surfaces also need to be kept free of debris, which can also create a hazard. Bike lanes in particular are subject to debris accumulation and require periodic sweeping. Bikeways must also be kept free of snow and ice in the winter.

FIGURE 26

Pavement Condition of City of Madison Multi-Use Paths (2005)



Parking and Transit Connections

Adequate, secure parking is needed at all likely bicyclist destinations. Weather-protected parking is important for employment sites and other long-term parking areas. Bicycle racks should accommodate the high security U-shaped bike locks and allow securing of the frame and at least one wheel. Transit and bicycling have the potential to complement each other well. Secure bicycle parking is needed at major transit stops and bicyclists also require access to the transit system such as through bike racks on buses.

Safety, Public Education

As with pedestrians, bicyclists commonly experience a lack of respect for their rights from motorists. Education and outreach efforts focusing on both motorists and bicyclists are needed to promote bicycle safety and awareness. The most critical education program for bicyclists is traffic operation, training them to ride as vehicle operators on the street system.

Traffic Enforcement

Most bicyclist/motorist crashes occur from either the bicyclist or motorist not following the "rules of the road." While funding is always an issue, safety education programs must be combined with enforcement programs focusing on common violations by bicyclists and motorists. WisDOT offers a course for police officers, Enforcement for Bicycle Safety. Three City of Madison police officers have been trained with the course and ten more will be trained in 2006 with a grant. Each fall when UW-Madison students arrive, there is a special effort at enforcement to instill good riding habits. The City of Madison Bicycle-Pedestrian Coordinator periodically offers a bicycle safety class that bicyclists may take to have their tickets excused. The City of Madison Police Department has four officers that make up a special Traffic Enforcement Safety Team, working with neighborhoods to target enforcement in problem areas.

Pedestrian Transportation

Introduction

Pedestrian travel is an important, yet often overlooked form of transportation. Walking is the second most common mode of transportation after the private motor vehicle. Walk trips accounted for 13.5% of all person trips in the City of Madison and almost 7% of trips in the rest of Dane County, according to a special county add-on sample of the 2001 National Household Transportation Survey (NHTS). Walking is also an essential part of all trips, whether they are made by car, bus, or bicycle (e.g., walking from the parking lot to the store or from home to the bus stop).

Pedestrian facilities are critical for providing access to neighborhood or commercial district destinations, including schools, parks, recreation, shopping, and work. Pedestrian facilities are also essential to a successful and accessible transit system. For children and persons without access to a motor vehicle or with a mobility limitation, provision of safe and convenient pedestrian facilities is essential. A convenient and safe system of pedestrian facilities also promotes other objectives such as improved health and fitness and decreased vehicular traffic congestion (e.g., around schools and other high activity areas).

An urban pedestrian transportation system—the physical infrastructure that allows for or promotes walking and other forms of pedestrian movement (e.g., wheelchairs)—involves three basic elements:

- Sidewalks, multi-use paths, or other walkways;
- Intersection corner or mid-block holding or queuing areas with facilities such as curb ramps, traffic controls (signals, signs), and bus stop boarding pads; and
- Pedestrian crossings of roads (e.g., crosswalks, refuge islands) or railway lines or other physical features of the transportation network (e.g., over/underpass).

Paved shoulders on roadways are not considered pedestrian facilities, but still can provide space for pedestrians away from motor vehicle traffic, particularly in rural areas.

Pedestrian Travel

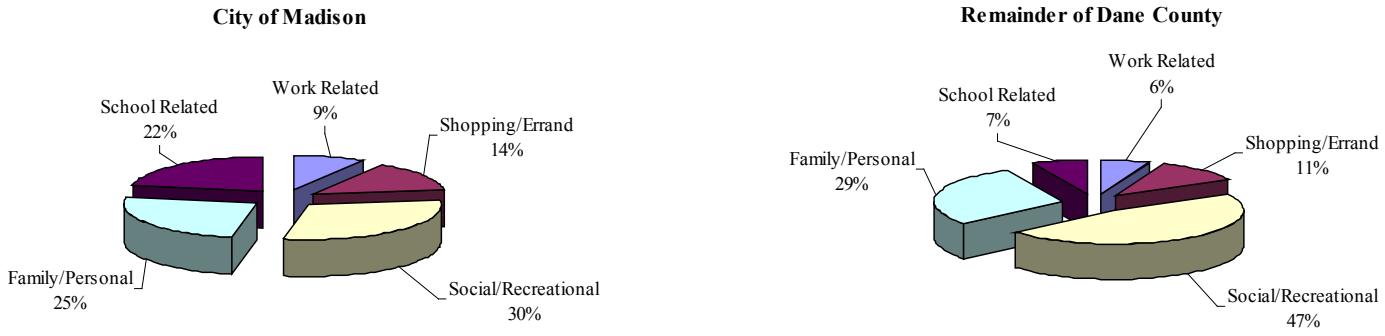
Walking for transportation purposes as opposed to recreation/exercise accounts for a significant number of trips, particularly in denser mixed-use areas, but it has declined over time. The percentage of City of Madison and Dane County commuters (16 years and older) who walked to work has declined each decade from 1970 to 2000. In 2000, 11% of City of Madison commuters walked to work versus 17% in 1970. For all Dane County commuters, the walk trip percentage dropped from 13% to 6% during the same time period. Both the percentage and total number of City of Madison and Dane County commuters who walked to work declined from 1990 to 2000.

The decline in pedestrian travel for work and other transportation purposes is due in part to the design of neighborhoods and employment centers in many new developments, which provide few destinations within convenient walking distance of most residences and workplaces. The majority of pedestrian work trips in the region are made by persons living in the greater Isthmus area (including UW-Madison campus) where the higher densities and mixed land uses put workplaces as well as other destinations closer to where people live. In 2000, over one-quarter of the persons residing in the greater Isthmus area walked to work, accounting for 75% of pedestrian work trips in the City of Madison and 64% of those in Dane County, according to the U.S. Census.

The number of commuters residing in the greater Isthmus area walking to work decreased from 1990 to 2000, but not as much as for the city and county as a whole. The number dropped from 11,160 or 31.3% of commuters in 1990 to 10,760 or 27.5% in 2000.

Figure 27 below shows the distribution of trip purposes for walk trips in the City of Madison and for the rest of Dane County. School related trips make up a much higher percentage of walk trips than for all person trips in the City of Madison, accounting for 22% of walk trips compared to just 8% of all person trips. Social/recreational trips accounted for 30% of walk trips versus 20% of all person trips in the City. For the rest of the county, social/recreational trips made up 47% of walk trips compared to 18% of all person trips, according to the 2001 NHTS.

FIGURE 27
DISTRIBUTION OF TRIP PURPOSES FOR WALK TRIPS



The large percentage of school related walk trips in the City of Madison is due in part to the large number of UW-Madison students living in the downtown/campus area. The greater percentage of school, work and shopping/errand walk trips by City of Madison residents (particularly those residing in the greater Isthmus area) compared to other county residents can be attributed in part to the more compact development pattern, particularly in older neighborhoods, with schools and workplaces mixed into residential areas, making these walking trips more feasible. In addition, the city has a finer, more interconnected network of streets with sidewalks complemented by multi-use paths, providing more direct connections between destinations.

The average length for walk trips was 0.8 miles in Dane County and the City of Madison, according to the 2001 NHTS. However, this number is skewed by the inclusion of recreational/exercise trips. Excluding these trips, the average trip length would be shorter. One quarter of a mile is the distance typically used for planning purposes. Most walk trips not made solely for exercise/recreation are less than one-half mile.

Inventory of Sidewalks/Walkways Along the Regional Roadway System

Sidewalks and walkways accommodate pedestrians by providing an accessible space to travel within the public right-of-way that is separated from roadway vehicles. They also provide places for children to walk, skate, ride bicycles, and play. Sidewalks and walkways improve mobility and safety for all types of pedestrians. Because they run parallel to roadways, along which origins and destinations are located, they provide equivalent connections to the roadways themselves. Sidewalks or walkways on bridges are important for providing safe crossings over rivers or other roadways. Sidewalks within developments provide direct, safe connections from the roadway or parking lot to building entrances and between buildings.

Sidewalks and walkways are associated with significant reductions in pedestrian-motor vehicle crashes, according to Federal Highway Administration (FHWA) research. FHWA estimates that around 8% of all pedestrian crashes involve people walking along the road.

MPO staff compiled an inventory and mapped the existing sidewalk system along all regional collector and arterial roadways in the county, indicating those roadway segments with a sidewalk or a walkway/path along both sides of the roadway, one side, or neither side. While sidewalks should generally be provided along both sides of all streets in urban areas, they are particularly important along collector and arterial roadways because of their higher traffic volumes and speeds and the fact that most destinations and bus routes are located on these roadways.

As illustrated in Figure 28, on the next page, the sidewalk system along the regional roadways is fairly complete within the cities and villages in the county, particularly in the downtown areas and along other roadways with commercial land uses. The sidewalk system is less complete in residential areas. For example, the Cities of Monona and Verona don't have sidewalks on many collector streets in residential areas. There are quite a few roadway segments with sidewalk only on one side. Provision of sidewalk on only side of the street can in many cases reduce the convenience, safety, and accessibility of the pedestrian transportation system by requiring pedestrians to cross the street—sometimes more than once—and also creates problems at intersections and for access to bus stops.

Roadway segments in cities and villages with no sidewalk or sidewalk on only one side are often located on the fringe in developing areas where the roadway still has a rural cross-section and/or development has not occurred on one side. In some cases, areas were developed under town jurisdiction without the requirement of urban street standards and sidewalks and were later annexed. Some smaller cities and villages have also not required sidewalks on both sides of the street. Sidewalks have also typically not been provided along frontage roads of limited-access roadways such as USH 51 (Stoughton Rd.) and the Beltline (USH 12/18).

While the goal is to provide a continuous sidewalk/walkway system, retrofitting streets without them will usually occur in phases. In retrofitting streets that do not have a continuous, accessible sidewalk/walkway system, locations near schools, parks, public buildings, bus stops, shopping, and employment should be the highest priority. Local officials often encounter difficulty in getting sidewalk retrofit projects approved, particularly in residential areas, due to landowner opposition. This stems primarily from a reluctance to pay for them and to shovel them in the winter as well as the perceived reduction in the landowner's usable property area. This increases the importance of ensuring that sidewalks and other pedestrian facilities are installed at the time of initial development and street construction.

Pedestrian Safety Data and Education

From 2000-2004, there was an average of 132 pedestrian crashes annually in Dane County. Figure 29, on page 83, shows the number of crashes during that time in the City of Madison, other larger cities and villages, and small villages or towns. Statewide, the number of pedestrian injuries decreased 33% and the number of fatalities 54% from 1980 to 2003. However, in the City of Madison the number of injuries has fluctuated, but remained relatively unchanged.

Pedestrians are much more likely to be injured or killed in crashes than persons involved in non-pedestrian crashes. For example, in 2001 97% of pedestrian crashes resulted in an injury compared to 31% for all other types of crashes.

FIGURE 28

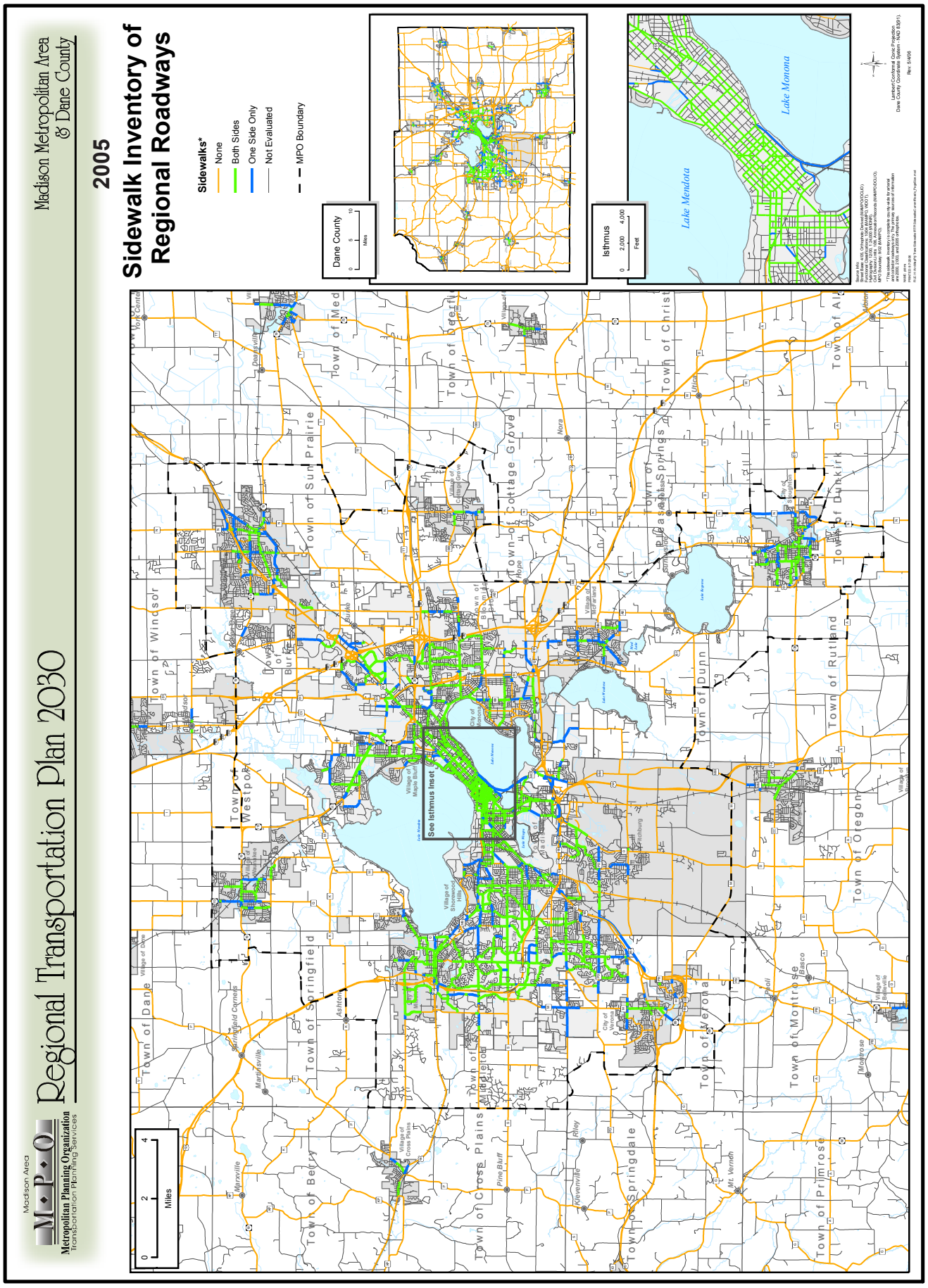
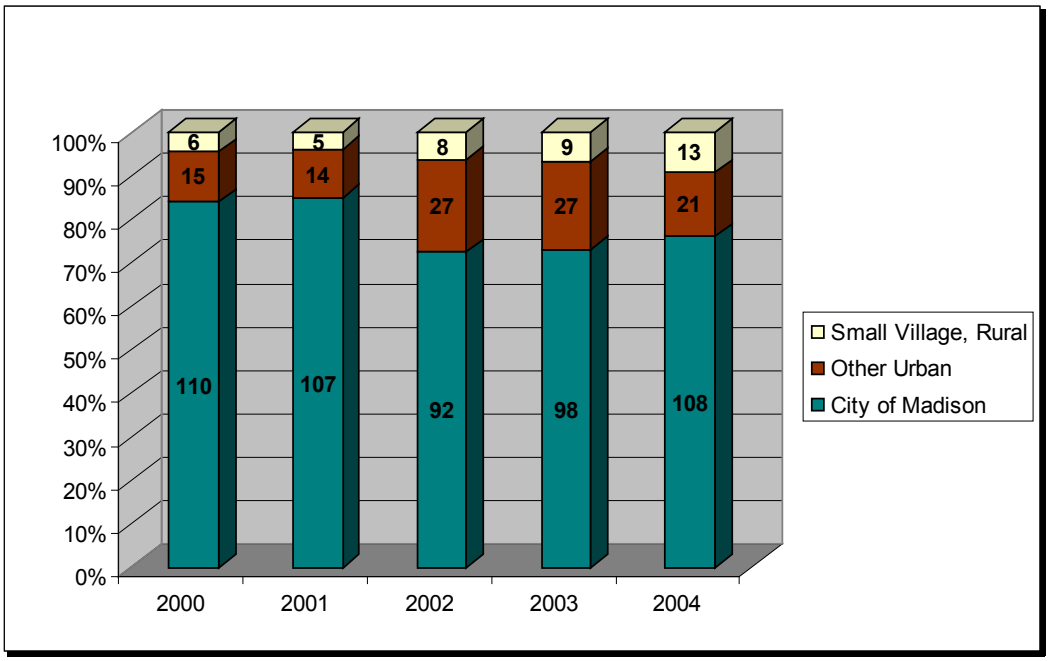

Madison Metropolitan Area & Dane County
Regional Transportation Plan 2030
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
2005
Sidewalk Inventory of Regional Roadways
Sidewalks*
None
Both Sides
One Side Only
Not Evaluated
MPO Boundary
Dane County
Isthmus
Lake Mendota
Lake Monona
See Isthmus Inset
Miles
Feet

FIGURE 29
PEDESTRIAN/MOTORIST CRASHES IN DANE COUNTY: 2000-2004



Statewide data show children ages 5-14 are at greatest risk of being involved in and injured in a pedestrian crash. They are typically involved in crashes caused by darting out into traffic and/or motorists' use of excessive vehicular speed in neighborhoods and school zones. Pedestrians aged 75 and older have the highest rate of fatalities, according to both statewide and City of Madison data. Older pedestrians do not have the same ability to recover from their injuries and many take longer to cross the street or have difficulty seeing or hearing traffic clearly. Children aged 10-14 also have a high rate of fatalities, according to City of Madison data.

According to statewide data, pedestrian crashes occur most often on weekdays between 3-7 p.m. This is not surprising as this is when traffic volumes are highest, most children are returning home from school, and most commuters are returning home from work. According to City of Madison data, almost 60% of pedestrian fatalities have occurred in the evening after 6 p.m. with 33% occurring after 10 p.m. It is suspected that use of alcohol by the driver and/or pedestrian was a contributing factor in many of these crashes. In 2003, 24% of the City of Madison pedestrian crashes involved alcohol.

Street or road crossings are, by far, the most common types of pedestrian crashes, accounting for around 60% of pedestrian crashes statewide. Other types include: pedestrian not in road (e.g., in parking lot); pedestrian walking along the road; and backing vehicle. In 2003, over 50% of the City of Madison pedestrian crashes occurred while the pedestrian was in a crosswalk. Of those 48% occurred at signalized intersections, 42% at stop-controlled intersections, and 10% at non-controlled intersections.

By far the most common contributing factor by pedestrians in City of Madison pedestrian crashes was making a sudden movement into the street, involved in about 20% of the crashes in 2002-2003. Others included disregarding the traffic signal, facing or not facing traffic, and wearing dark clothing. By far the most common contributing factor by drivers in City of Madison pedestrian crashes was failing to yield the right of way and/or being inattentive, involved in around 33% of the crashes in 2002-2003.

Figure 30, on the next page, shows the location of street crossing pedestrian crashes in the City of Madison from 2002 to 2004.

Higher motor vehicle traffic volumes and speeds create a less desirable and less safe environment for pedestrians. At slower speeds (25 miles per hour or less), vehicles can stop relatively easily for pedestrians and the likelihood of severe injury or a fatality is low. However, from 25 to 35 m.p.h. the danger to pedestrians increases rapidly with speed. Figures 31 and 32, on page 86, show the relationship between travel speed and safe stopping distance as well as the likelihood the pedestrian will be killed. Since most pedestrian crashes occur on lower speed (25 to 30 m.p.h. speed limit) streets, reducing travel speeds on these roads would not only eliminate some crashes by reducing the distances drivers need to stop, but also would reduce the severity of some crashes.

Pedestrian Safety Education

The City of Madison has a pedestrian and bicycle safety program with a full-time Bicycle/Pedestrian Safety Educator who teaches basic safety skills to elementary children at the public schools and local agencies. The Madison Area MPO supports this position through an annual allocation of its Federal Surface Transportation Program (STP) – Urban funding. The City's Bicycle/Pedestrian Coordinator advocates for pedestrians by working with the City of Madison and other area planning and transportation agencies to improve pedestrian facilities and increase their safety. As part of its work, the City of Madison's Police Department's Traffic Enforcement Safety Team (TEST) also educates the public about pedestrian safety and works closely with the City's Traffic Engineering Department. To encourage more pedestrian travel, the City's Fit City program is attempting to improve nutrition and increase physical activity among all Madison residents by offering monthly fitness events. The City is also in the process of developing Safe Walking Maps and Parent Drop-Off Maps for elementary schools.

The Wisconsin Department of Transportation (WisDOT) administers a pedestrian/bicycle education and enforcement reimbursement program and a Safety Community Coalition grant program aimed at injury prevention. WisDOT also distributes a variety of materials aimed at educating both motorists and pedestrians about their respective rights and responsibilities with much of the material aimed at children. WisDOT also plays an important role in educating drivers through its driver licensing responsibility, including publishing of the Motorist's Handbook.

The Safe Community Coalition of Madison and Dane County, a local public/private partnership, conducts safety education and other collaborative activities, including numerous projects focused on walking and pedestrian safety. These include the Slow Down yard sign campaign, Walk to School Week, and the Flags over Dane County Adopt-A-Crosswalk Program. A new project being implemented in 2006 with funding from the National Highway Traffic Safety Administration is a walking promotion and pedestrian safety program aimed at older adults. The goals of the projects are to: (1) increase the number of motorists who yield to pedestrians in crosswalks; (2) reduce the number of injuries and fatalities among older adult pedestrians; (3) identify and reduce barriers to safe walking in particular areas in Madison and Stoughton; and (4) develop a project tool kit for use by other communities.

FIGURE 30

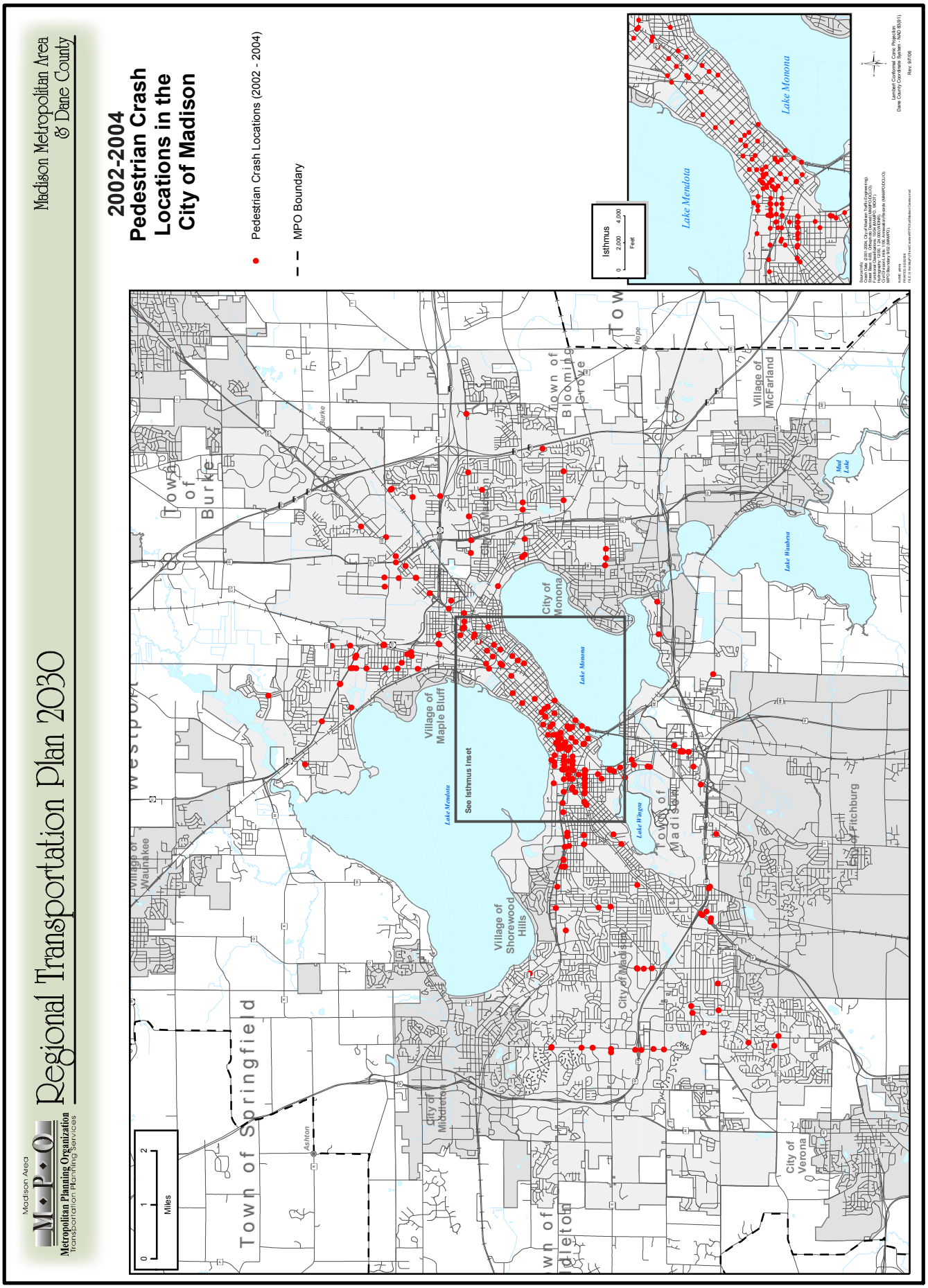

Madison Metropolitan Area & Dane County
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Regional Transportation Plan 2030
2002-2004 Pedestrian Crash Locations in the City of Madison
Pedestrian Crash Locations (2002 - 2004)
MPO Boundary
0 1 2 Miles
See Isthmus Inset
Isthmus
0 2,000 4,000 Feet
Lake Mendota
Lake Monona
Lake Wingra
Lake Waubesa
Mud Lake
Town of Springfield
Town of Burke
Town of Bloomington Grove
Town of Madison
Village of Maple Bluff
Village of Shorewood Hills
Village of McFarland
City of Monona
City of Middleton
City of Verona
City of Fitchburg
Village of Waunakee
Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83(91)
Rev. 9/7/06

FIGURE 31

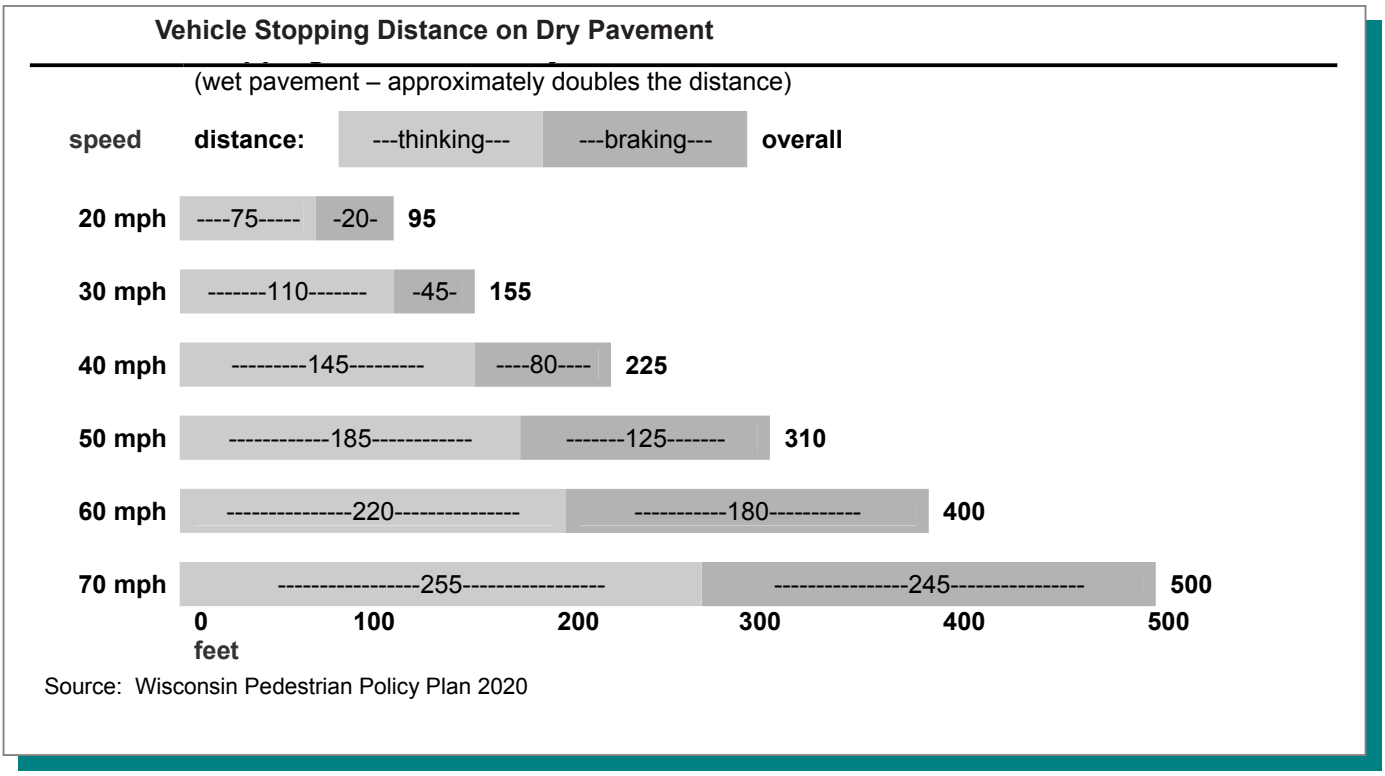


FIGURE 32

Likelihood of Pedestrian Fatality in Crash

Motorist Speed (mph)	Chance of Pedestrian Fatality
20	5%
30	45%
40	85%

Existing Pedestrian-Related Policies, Standards, and Requirements

Local Policies and Requirements Regarding Pedestrian Facilities

The single most efficient and effective way for communities to ensure the needs of pedestrians are met is through adoption of subdivision and zoning ordinance standards that require: (a) installation of sidewalks and other pedestrian facilities on new streets; (b) an interconnected street and walkway system for new subdivisions; and (c) a convenient and continuous pedestrian circulation system for new commercial and multi-family residential developments. In addition, a zoning ordinance that maximizes opportunities for mixed-use development will ensure that persons have services within walking distance.

Table 20, on the next page, summarizes the pedestrian facility requirements and policies and street standards and sidewalk policies for cities and villages in the Madison Metropolitan Planning Area.

TABLE 20
PEDESTRIAN FACILITY REQUIREMENTS AND POLICIES AND STREET STANDARDS FOR CITIES AND VILLAGES IN THE MADISON AREA MPO PLANNING AREA

City/Village	Sidewalks				Streets			Pedestrian Access / Circulation Standards
	Width	Requirements	Cost Sharing Policy	Maint., Snow Removal Ord.	Block Length	Street Width	Radius of Curvature	
Madison	5' minimum	Both sides of all new streets.	Developer pays 100% for new streets, including intersection area improvements. City pays 50%, landowners 50% for existing streets and reconstruction, repair.	Yes	No min., max., except in R2S Dist. where 500' max.; 10' wide mid-block pedestrian way required if >900' where essential for ped. access, circulation.	Proposed ordinance would require min. 32' width (from face of curb) for distributor collector and local streets, but only 28' for local streets if residential density <5.44 du/ac or 5.44-12.44 du/ac and conditions re: driveways, garages met and other factors considered. 36' min. if special on-street parking generators (parks, schools, churches, etc.). Up to 46' min. if street is bicycle route and parking on both sides.	150' for local streets, 300'-700' for 2-lane collectors depending upon speed limit (25-35 mph)	General requirement for conditional uses to provide internal circulation improvements, including those for pedestrians. Driveways, parking areas required to be separated from walkways by markings, curb, etc. in Admin. Office and Admin. Office R&D Districts.
Middleton	4' residential 5' comm./ industrial	Both sides of all collector streets. Requirement determined by Plan Commission for local streets.	Developer pays 100% for new streets. Landowners pay 100% for existing streets and for reconstruction, repair.	Yes	600' min.; 10' wide mid-block pedestrian way required if >900' or where essential for ped. access, circulation.	32' for local residential streets, 36' for collectors (from edge of pavement, not incl. gutter pan)	200' for local residential streets, 450' for collectors	Ped. circulation must prevent ped. use of vehicular ways, parking spaces and ped. access must be provided to public walkways in Planned Dev. Infill District.
Fitchburg	5' minimum	Both sides of all new streets. Program in place to prioritize and provide sidewalks on both sides of existing streets identified in Ped/Bike Plan that have higher traffic volumes and provide route to shopping, employment, parks, schools, and bus stops.	Developer pays 100% for new streets. City pays 100% for existing s/f residential streets (primarily collectors) outlined in Draft Ped/Bike Plan (Dec. 2000) while landowners pay 100% for those s/f residential streets not listed in the plan and m/f residential and commercial streets. City pays 50%, landowners 50% for reconstructions, repair in s/f residential areas while landowners pay 100% in m/f residential and commercial areas.	Yes	600' min., max. 1,200'; If >900', may require 10' wide mid-block pedestrian way.	32' for local residential streets, 36' for m/f resid., commercial areas, 40'-44' for collector streets (from face of curb). 30' width for local residential streets (w/60' vs. 66' ROW) allowed by exception.	150' for local streets, 250' for collectors	No. Ped. Improvements recommended during development reviews if not shown.

TABLE 20 (CONTINUED)
PEDESTRIAN FACILITY REQUIREMENTS AND POLICIES AND STREET STANDARDS FOR CITIES AND VILLAGES IN THE MADISON AREA MPO PLANNING AREA

City/Village	Sidewalks				Streets			Pedestrian Access / Circulation Standards
	Width	Requirements	Cost Sharing Policy	Maint., Snow Removal Ord.	Block Length	Street Width	Radius of Curvature	
Sun Prairie	5' minimum	Both sides of all streets in new developments. At least one side for existing developments, but both sides for arterial streets	Developer pays 100% for new streets. City pays 100% for existing streets and reconstruction, repair for residential properties w/<5 du, while landowners pay 100% for m/f (5+ du's), commercial, and industrial properties	Yes	500' min., 1,200' max.; May require mid-block pedestrian way of >900' or where essential for ped. access, circulation.	33' for local, collector streets w/residential use (29' often used now at discretion of City Engineer); 39' for commercial/industrial areas (from face of curb)	150' for local, 250' for collector streets	Yes, for commercial developments > 25K sq. ft. 8' wide sidewalks required along street frontage, from public sidewalk to customer entrance(s) of buildings, and along building w/ customer entrance, abutting parking area.
Verona	5' minimum	Both sides of all new streets and on existing streets, which serve as major pedestrian access routes to/from ped. traffic generators such as business establishments, schools, parks m/f resid. developments, etc.	Developer pays 100% for new streets. City pays 100% for existing urban streets. Landowners pay 100% for streets reconstructed from rural to urban std. and for reconstruction, repair.	Yes	500' min., 1,200' max..; 10' wide mid-block pedestrian way w/5' sidewalk may be required for blocks >900 ft. if deemed essential for access, circulation	36' for local streets, 40' for collector streets (from face of curb)	175' for local, 300' for collector streets	No
Stoughton	4' minimum	Both sides of all new streets. Program in place to eventually provide on both sides of existing streets with commercial, industrial, or multi-family residential uses or that provide route to school and on at least one side on existing residential streets.	Developer pays 100% for new streets. City pays 50%, landowners 50% for existing streets and reconstruction, repair.	Yes	No min. or max. If >900', 10' wide mid-block pedestrian way required.	38' for local residential streets, 44' for collector streets (from face of curb)	100' for local, 300' for collector streets.	Yes, for commercial developments >20 K sq. ft. Ped/bike connections required to existing and planned public ped/bike facilities and adjacent properties; walkways required from building entrances to public sidewalks.
Waunakee	5' minimum	Both sides of all new streets. Both sides of existing streets with commercial, industrial, or multi-family residential uses or that provide route to school. At least one side on existing residential streets. May require construction of multi-use paths in new developments.	Developer/landowners pay 100% for new sidewalks, except where construction of curb & gutter has changed grade, then 50% owners, 50% village. Cost split 50/50 for reconstruction, repair.	Yes	500' min. generally; 1,500' max. If >900', may require 10' wide mid-block pedestrian way.	32' for local residential streets, 36' for collector streets (from face of curb). 28' allowed for residential streets if less than 5 du/ac.	100' for local, 300' for collector streets.	No

TABLE 20 (CONTINUED)
PEDESTRIAN FACILITY REQUIREMENTS AND POLICIES AND STREET STANDARDS FOR CITIES AND VILLAGES IN THE MADISON AREA MPO PLANNING AREA

City/Village	Sidewalks				Streets			Pedestrian Access / Circulation Standards
	Width	Requirements	Cost Sharing Policy	Maint., Snow Removal Ord.	Block Length	Street Width	Radius of Curvature	
Cottage Grove	4' min. local, 5' collector streets	Ordinance requires on both sides of all new collector streets and indicates they may be required on all new local streets if gross density of 4+ units per acre. Current policy is to require on both sides of all new streets.	Developer pays 100% for new streets. Village pays 50%, landowners 50% for existing streets and reconstruction, repair (except village pays 100% for cub ramps and driveway ramps if curb grade is changed by >6").	Yes	600' min., 1,500 max. generally. If >900' , may require 10' wide mid-block pedestrian way.	28' to 36' for local streets, 32' to 40' (46' to 48' if parking + bike lanes included) for collector streets (from face of curb).	100' for local, 300' for collector streets	Yes, for "group developments' (5+ DUs, 2+ non-resid. Uses, bldg. 40K+ sq. ft. or larger). Require safe ped. access w/i development and connections to existing, planned ped/bike facilities and sidewalks to all building entrances from public streets.
McFarland	5' minimum	Both sides of all new major and collector streets. May be required for other streets if plat will significantly increase traffic volume or deemed necessary for safe pedestrian circulation.	Developer pays 100% for new streets. Current policy is for village to pay 100% for existing streets and for reconstruction, repair.	Yes	400' minimum generally; 1,500' max.; If >900', may require 10' wide mid-block pedestrian way.	32' for local streets, 44' for collector streets (from face of curb).	100' for local, 200' for collector streets.	Ped. circulation must prevent ped. use of vehicular ways, parking spaces and ped. access must be provided to public walkways in Planned Dev. Infill District.; General std. to provide for safe, convenient movement of pedestrians in Planned Dev. District
Monona	No standard	No specific requirements	Landowners pay 60%, city pays 40% for new street construction. City pays 100% for reconstruction, repair in single- and two-family residential areas. Landowners pay 100% for reconstruction in m/f resid. and commercial areas.	Yes	Not applicable.	28' pavement width (33' curb to curb) for local streets.	Not applicable	General requirement for all uses that safe and efficient pedestrian circulation be assured.

Sidewalk Requirements and Cost Sharing Policy

Most cities and villages in the Madison Metropolitan Planning Area require sidewalks on both sides of all new streets. The Village of Cottage Grove's subdivision ordinance requires sidewalks on both sides of collector streets only, indicating they may be required for local streets if the gross density is four or more units per acre. However, the Village Director of Public Works indicated that the Village now requires sidewalks on local streets as a matter of policy. The City of Middleton ordinance also doesn't require sidewalks on both sides of local streets, but the Planning Commission has typically required them. The Village of McFarland doesn't require sidewalks on minor or local streets, but they can be required if determined to be necessary for safe pedestrian circulation.

Most of the communities require that sidewalks have a minimum width of five (5) feet, as recommended by FHWA and the Institute of Transportation Engineers (ITE). This width allows two people to pass comfortably or walk side by side and also better accommodates wheelchairs and other users. The City of Stoughton allows a four (4) feet minimum width, while the City of Middleton allows four (4) feet on residential streets and the Village of Cottage Grove allows four (4) feet on local (vs. collector or arterial) streets. All of the communities have the authority to require a wider than minimum sidewalk width where deemed necessary, such as around schools or downtown commercial districts.

All of the communities have standard ordinances prohibiting obstruction of sidewalks and requiring maintenance and timely removal of snow from them.

All of the communities require developers or landowners to pay 100% of the cost of sidewalks along new streets built in conjunction with new development. For retrofitting in sidewalks on existing streets in existing developed areas or reconstruction or repair of existing sidewalks, the cost sharing policies vary. Most commonly, the municipality pays 50% and requires the landowner to pay 50% of the cost. The Cities of Madison and Stoughton and Villages of Waunakee and Cottage Grove have such a policy. The City of Middleton requires landowners to pay 100% of such cost, while the Village of McFarland pays 100% of the cost. The City of Verona pays 100% of the cost for new sidewalks on existing streets, but requires landowners to pay 100% for streets reconstructed from a rural to urban standard and for sidewalk reconstruction and repair.

The Cities of Fitchburg and Sun Prairie distinguish between single-family (s/f) residential streets and others. Fitchburg pays 100% of the cost of new sidewalks on existing s/f residential streets outlined in its Pedestrian & Bicycle Plan, which are primarily collector streets and/or those near schools, shopping centers, parks, and other destinations. Landowners pay 100% for s/f residential streets not listed in the plan and multi-family (m/f) residential and commercial streets. For reconstruction and repair, the City splits the cost 50/50 for s/f residential properties and requires landowners to pay 100% of the cost for all other properties. In cases where a sidewalk already exists on one side of the street, the cost is still split evenly to property owners on both sides of the street if the land use is the same on both sides. The City of Sun Prairie has a similar policy, paying 100% of the cost of sidewalks on existing streets and for reconstruction and repair for residential properties with less than 5 units and requiring landowners of all other properties to pay 100% of the cost.

Street Requirements

The layout and design of streets has a significant impact on walkability of areas. Long blocks and cul-de-sacs require out-of-direction travel. Over-designed streets, with widths and curb radii at intersections that are wider or longer than necessary, encourage higher traffic speeds, reducing pedestrian safety and making pedestrians feel less comfortable.

Most of the cities and villages in the MPO planning area require street block lengths in new subdivisions to be a minimum of 500-600 feet and a maximum of 1,200-1,500 feet. The Cities of Madison and Stoughton do not have a required minimum or maximum block length, except Madison has a very short 500 feet maximum in its small lot single-family residential (R2S) district, which allows a minimum lot size of 4,000 sq. ft. and lot width of 40 feet. All of the communities have a standard provision allowing the requirement of a mid-block pedestrian way if a block is more than 900 feet long.

For local residential streets, the most common required minimum street width is 32-33 feet. Some communities measure the distance from the curb face while others measure it from the edge of the pavement. The Cities of Verona and Stoughton require a minimum of 36 and 38 feet respectively from the face of the curb. For two-lane collector streets, the required street width varies from 36 to 44 feet.

There is typically very little street parking in newer developments and wide streets without parked cars encourage speeding. Consequently, there has been interest in some communities in reducing required street widths to help improve safety and provide a more pedestrian-friendly environment. The City of Madison and Village of Waunakee allow a 28-foot width for local streets if the residential density is less than 5.44 and 5 dwelling units per acre (du/ac) respectively. The City of Sun Prairie is now often allowing a 29-foot width for local residential streets at the discretion of the City Engineer.

Following extensive study and discussion by the City's Long-Range Transportation Planning Commission, an ordinance amendment was passed in the City of Madison to allow a narrower 28-foot width for local streets in higher density (up to 12.44 du/ac) residential neighborhoods. Certain conditions would need to be met related to garages and off-street parking space to ensure that there will be gaps in on-street parking. Wider streets would still be required where there are special on-street parking generators (parks, schools, etc.) and/or the street is a designated bicycle route.

One of the common pedestrian crash types involves a pedestrian who is struck by a right-turning vehicle at an intersection. A wide curb radius typically results in motorists turning at a higher speed. Curb radii are often wider than necessary to safely accommodate maintenance and emergency vehicles and buses in residential areas. Where there is a parking and/or bicycle lane, curb radii can be even tighter, because vehicles have more room to negotiate the turn. The radius of curvature required by cities and villages in the MPO area for local streets varies from 100 to 200 feet. For two-lane collectors, it varies from 200 to 450 feet. The City of Madison requires 300 to 700 feet depending upon the posted speed limit (25-35 m.p.h.).

Pedestrian Access/Circulation Standards

Even with sidewalks along public streets, pedestrians must still safely and conveniently travel from the street to the entrance of the building in commercial, institutional, and multi-family developments. Site planning standards in the zoning ordinance ensures that the needs of pedestrians are met. The zoning ordinances of cities and villages in the MPO planning area have specific requirements for provision of safe vehicular circulation and off-street parking, but some do not have any site planning standards for pedestrian access and circulation. Those communities that do have such standards don't include them in all of their non-s/f residential districts.

The Cities of Sun Prairie and Stoughton and the Village of Cottage Grove have the most detailed standards, which apply to larger commercial developments (greater than 20,000-40,000 sq. ft) and, in the case of Cottage Grove, other "group" developments (greater than five dwelling units or two or more non-residential uses). City of Sun Prairie requirements include: direct connections to adjacent land uses; weather-protected sidewalks from the public sidewalk to the principal customer entrance of buildings with adjoining landscaped areas; sidewalks along the full length of the building along any facade with a customer entrance; and use of materials for internal walkways to distinguish them from vehicular ways. Requirements in other ordinances include connections to existing or planned pedestrian/bicycle facilities and pedestrian furniture.

Federal Highway Administration (FHWA) and Wisconsin Department of Transportation (WisDOT) Sidewalk Guidelines

Table 21 outlines guidelines that FHWA has adopted for installing sidewalks as recommended by the Institute of Transportation Engineers (ITE) (See *Implementing Pedestrian Improvements at the Local Level*, Publication No. FHWA-98-138). WisDOT has also adopted these guidelines (See *Wisconsin Pedestrian Policy Plan 2020*, Appendix N (March 2002)). The guidelines suggest where sidewalks should be built based upon land use, functional classification of the roadway, and residential density. WisDOT also has guidelines for determination of the need for pedestrian facilities along state roadways, which include factors for consideration such as: land use type and density; presence of pedestrian traffic generators; opportunities to connect to pedestrian systems and transit stops; and the needs of special groups (See Appendix M of *Wisconsin Pedestrian Policy Plan 2020*).

U.S. Department of Transportation Policy and Programs for Accommodating Pedestrian and Bicycle Travel

Federal legislation and regulations require that the safe accommodation of non-motorized users be given due consideration in state and regional transportation plans and during the development and construction of all Federal-aid transportation projects. The special needs of the elderly and persons with a disability must be considered (e.g., use of audible signals, where appropriate) (See 23 U.S.C. Section 217 and 23 C.F.R. Section 652).

TABLE 21

Guidelines for Installing Sidewalks

Land Use/ Roadway Class/Dwelling Units	New Urban & Suburban Streets	Existing Urban & Suburban Streets
Commercial & Industrial / All streets	Both sides.	Both sides. Every effort should be made to add sidewalks where they do not exist to complete missing links.
Residential / Major Arterials	Both sides.	Both sides.
Residential / Collectors	Both sides.	Multifamily-both sides. Single family-prefer both sides; require at least one side.
Residential / Local Streets / More than 4 units per acre	Both sides.	Prefer both sides; require at least one side.
Residential / Local Streets / 1 to 4 units per acre	Prefer both sides; require at least one side.	One side preferred; at least 4-ft. shoulder on both sides required.
Residential / Local Streets / Less than 1 unit per acre	One side preferred; shoulder on both sides required.	At least 4-ft. shoulder on both sides required.

Notes:
1) Any local street within two blocks of a school site that would be on a walking route to school – sidewalk and curb and gutter required.
2) Sidewalks may be omitted on one side of a new street where that side clearly cannot be developed and where there are no existing or anticipated uses that would generate pedestrian trips on that side.
3) Where there are service roads, the sidewalks adjacent to the main road may be eliminated and replaced by a sidewalk adjacent to the service road on the side away from the main road.
4) For rural roads not likely to serve development, a shoulder of at least 4 feet in width, preferably 8 feet on primary highways, should be provided. Surface material should provide a stable, mud-free walking surface.

Source: Design and Safety of Pedestrian Facilities, A Recommended Practice, 1998. Institute of Transportation Engineers.

TEA-21, the predecessor transportation legislation to SAFETEA-LU, required the Federal Highway Administration (FHWA) to develop guidance on the various approaches to accommodating pedestrian and bicycle travel. FHWA convened a task force and subsequently issued a Joint Statement on Integrating Bicycling and Walking into Transportation Infrastructure. The statement includes the following specific policy regarding the provision of pedestrian and bicycle facilities:

> Bicycle and pedestrian ways shall be established in new construction and reconstruction projects [near] or within all urbanized areas unless one or more of three conditions is met:
>
> - Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate pedestrians and bicyclists elsewhere within the right of way or transportation corridor.
>
> - The cost of establishing bikeways and walkways would be excessively disproportionate to the need or probable use. "Excessively disproportionate" is defined as exceeding 20% of the cost of the larger transportation project.
>
> - Where sparsity of population or other factors indicate an absence of need.
>
> Sidewalks, shared use paths, street crossings (including over and under crossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated, and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.

The statement also indicates that the potential future demand for walking and bicycling facilities should be anticipated and that the design and construction of new facilities should not preclude provision of future improvements. In addition, the need for pedestrians and bicyclists to cross corridors as well as travel along them is to be addressed through the design of intersections and interchanges.

ISTEA, the landmark federal transportation legislation adopted in 1991, established a Local Transportation Enhancements (TE) Program to fund projects or programs that "enhance" the transportation system. Subsequent reauthorization bills, TEA-21 and SAFETEA-LU, have continued the program. Among the categories of projects eligible for funding are provision of pedestrian and bicycle facilities, preservation of abandoned railway corridor (including conversion and use thereof for pedestrian/bicycle trails), and provision of safety education for bicyclists and pedestrians.

SAFETEA-LU, adopted in August 2005, provided funding to state departments of transportation to create and administer Safe Routes to School (SRTS) programs. The SRTS program is designed to encourage children ages K-8 to walk and bicycle to school by creating safer walking and bicycling routes and educating parents and children on pedestrian and bicycle safety. Potential projects include adding sidewalks or multi-use paths, traffic calming initiatives, and creating programs that encourage children to walk or bicycle such as a "walking school bus." WisDOT has hired a SRTS Program Manager and is in the process of establishing a program. Educational and other materials will be developed for school districts and communities and an application process will be developed for programs and small-scale capital projects. Projects will be 100% federally funded.

<u>Wisconsin Department of Transportation (WisDOT) and Dane County Highway and Transportation Department Cost Sharing Policies Regarding Sidewalks on Joint Projects</u>

The Wisconsin Department of Transportation's (WisDOT) cost sharing policy for sidewalks on urban non-freeway projects on state roadways is outlined in the department's Program Management Manual along with its other facility investment and cost sharing policies. WisDOT will pay 100% of the cost of replacement sidewalks necessitated by road reconstruction if the local jurisdiction agrees to accept responsibility for sidewalk repair, maintenance, and replacement in the future (unless caused by a future road project). WisDOT will also pay 80% of the cost of new sidewalks and 100% of the

cost of purchasing right-of-way and grading for (re)construction and recondition projects. There is an exception for cases where real estate costs are prohibitive and/or the local jurisdiction does not anticipate the need for sidewalks. WisDOT will also pay 100% of curb ramps and median accommodations. WisDOT will participate in the cost of new sidewalks only if installed at the time of project construction. Reasonable sidewalk access over bridges (one side or two) will be provided when sidewalks exist on either end of the bridge.

The Dane County Highway and Transportation Department's cost sharing policy for sidewalks on joint projects with municipalities on county roadways states that where the municipality has a sidewalk assessment policy, the County will share in one-half of the costs of sidewalk construction for those sections of sidewalk not directly assessable to the adjacent property owner. The County will share in one-quarter of the cost for those sections of sidewalk that are directly assessable to the property owner. The amount assessed to the property owner is to be credited equally to the local share provided by the County and the municipality. For those municipalities that do not have a sidewalk assessment (and thus usually pay 100% of the cost), the County will not share in the costs of sidewalk construction. In all cases, the municipality must agree to be responsible for the future costs of the maintenance and repair of the sidewalk.

Issues

Roadway, Intersection Design and Street Crossings

Roadways designed primarily for motorists without safe access and accommodations for pedestrians and other users create unsafe conflicts for pedestrians with motorists and discourage walking. Even if sidewalks are provided, high-speed, high-volume roadways with long distances between controlled crossings and with large intersections create major barriers for pedestrians. Road design is a major factor in determining vehicle speed and the feasibility of pedestrian crossings. Lane width, overall street width, street curvature, turning radii, sight lines and distances, adjacent land use development and design, and traffic volumes (including turning and intersecting traffic) all contribute to the "design" speed for a given roadway. Speed limits are not effective if inconsistent with the design of the street.

In designing roadways and intersections, the needs of motorists must be balanced against the needs of pedestrians and other users. This balance is achieved differently in different locations depending upon the roadway classification and relationship to the rest of the system, whether it is a truck route, the area type, and other factors. However, the impact that the different transportation modes have on each other must still be carefully considered. Special consideration should be given to pedestrians in areas that generate significant pedestrian activity such as schools, commercial business districts, elderly housing areas, and bus stops.

An important aspect of traffic and pedestrian management is the issue of how much vehicles and pedestrians should be controlled as opposed to letting motorists and pedestrians use their own judgment. For example, crosswalks can be regulated with a traffic signal to protect pedestrians, but this requires pedestrians to wait longer than if motor vehicles yielded when pedestrians entered the crosswalk. An exclusive pedestrian traffic signal (all cars are stopped and pedestrians can cross in any direction) removes all conflicts between vehicles and pedestrians, but requires a longer wait for pedestrians than a concurrent signal (where vehicles can turn into the crosswalk).

Pedestrian levels of service based upon delay at intersections should be used in transportation planning similar to use of motorist levels of service. The issue is one of safety as well as convenience. When pedestrians are inconvenienced by long delays, limited crossing opportunities, or motorists that don't yield while they are in a crosswalk, there is the potential that they will ignore traffic signals and cross wherever they can.

Improved street crossing opportunities can be provided through the use of raised medians, refuge islands, curb extensions, and pedestrian signals, where appropriate. Mid-block crossings of major streets can be used in some cases where blocks are particularly long, but only if carefully designed. They can be signalized or unsignalized with markings, but should only be used when pedestrian volumes are high and should not be located less than 300 feet from an intersection. Grade-separated pedestrian over- or underpasses can be used in some cases to allow pedestrians to cross access-controlled or other major roadways without delay and get pedestrians out of the way of motorists. However, such facilities are costly, not feasible in many instances (e.g., there is insufficient space for ADA-compliant ramps), and not effective if using them requires significantly more time crossing the street.

Barriers and Connectivity

Barriers to pedestrian travel can include large parking lots, rivers and creeks, railroads, major roadways with limited controlled crossings and/or no sidewalks. Direct, safe, and convenient connections between areas divided by such barriers is challenging, and exacerbated by poor development practices. Pedestrians face obstacles and conflicts when roadways and developments are designed primarily for the automobile. Planning for and development of a well-connected "grid" street system helps distribute traffic and can reduce the need for multi-lane (particularly 6-lane) roadways with large intersections, which are major barriers to pedestrians and bicyclists.

Conducive Community and Site Development Patterns

Urban design plays a large factor in the viability and attractiveness of walking for trips other than for simply social/recreational purposes. Relatively compact and well-organized mixed-use development with relatively short street blocks and buildings located close to the street provides a wide range of services and other destinations within walking distance. Where possible, mixed-use development also allows motorists to park or transit users to get off the bus and walk between several uses in a single trip. Additionally, a pedestrian-scaled area with a diversity of uses balances activity between the different times of the day and week, creating a busier, safer and more exciting environment. The quality of the pedestrian experience is important to increasing walking as a transportation mode. While creating new pedestrian-friendly areas can be done more easily in new developments, they can also be retrofitted into established predominantly auto-oriented, single-use areas through neighborhood commercial or traditional neighborhood zoning and well-designed redevelopment.

Pedestrian Access to Private Developments, Interface With Transit

An important aspect of site design is pedestrian access from the sidewalk to a development and circulation within the development. Many commercial developments have been constructed with buildings located well off the street with no walkways to get pedestrians safely to building entrances. Also, numerous driveways can be a safety issue for pedestrians. Transit use is highly dependent on pedestrian access. Pedestrian-friendly development that provides short, direct access between bus stops and building entrances, locates stops in pleasant areas, and includes bus stop amenities such as shelters is very important to the success of transit. At a minimum, stops should include concrete bus pads to provide accessibility for mobility-impaired persons.

Consideration of the Needs of Persons with a Disability or Special Needs

The elderly, children, and persons with disabilities warrant special consideration in the design and maintenance of pedestrian facilities, including traffic control devices. Their physical and cognitive limitations and inexperience can put them at a disadvantage as pedestrians, while at the same time they are more likely to rely on walking to get around. According to the 2000 U.S. Census, around 12% of Dane County's population had some type of disability, including over 27,000 persons in the City of Madison. The percentage of persons with a disability is expected to increase significantly in the next twenty years. An estimated 85% of Americans living to full life expectancy will experience some sort of permanent disability sometime in their lifetime.

The 1990 Federal Americans with Disabilities Act (ADA) and implementing regulations require "accessible" design for new and altered buildings and facilities, including pedestrian facilities, in order to make them usable to persons who have disabilities. Under the ADA, the U.S. Architectural and Transportation Barriers Compliance Board (Access Board) is responsible for developing design guidelines for accessible buildings and facilities, known as the Americans with Disabilities Act Accessibility Guidelines (ADAAG). The Access Board's guidelines become legally enforceable when they are adopted as standards by the agencies responsible for overall implementation and enforcement. The U.S. Department of Justice (USDOJ) and U.S. Department of Transportation (USDOT) are responsible for the standards under the ADA.

The Access Board has developed ADA Accessibility Guidelines for building sites and facilities on those sites, which have been adopted by the USDOJ and USDOT as ADA standards, but the Board has not yet developed specific standards for public rights-of-way. The standards for building sites and facilities do contain provisions that are applicable to sidewalks and other pedestrian facilities and should be followed whenever possible. Most notably, curb ramps are specifically required wherever a new or altered pedestrian walkway crosses a curb or other barrier to a roadway, or similarly whenever a new or altered roadway intersects a pedestrian walkway. In addition, a 24-inch strip of truncated dome (detectable warning) material is required along the full width of the ramp so that vision impaired persons do not inadvertently travel into the street. Crosswalks need to must be at least six feet wide.

The ADA implementing regulations also require that local units of government develop a Sidewalk Transition Plan that includes an assessment of existing sidewalks requiring access improvements and a schedule for curb ramp installations. A Sidewalk Master Plan is also required that addresses and prioritizes the removal of barriers along sidewalks. Prioritization criteria might include an assessment of pedestrian travel demand and access to public schools and other public facilities. Despite the fact that Sidewalk Transition Plans were required to be developed by July 1992, many, if not most, communities have not developed them. In Dane County, the City of Madison is the only city or village that has one.

The Access Board published draft ADA Accessibility Guidelines for Public Rights-of-Way in November 2005 for public comment. The effort is the third attempt to issue the guidelines. Previous drafts were published in 1994 and 2002. Despite the lack of current comprehensive enforceable standards for public walkways, the ADA still requires that sidewalks and other pedestrian facilities be made accessible to and usable by persons with disabilities.

In conclusion, the pedestrian system should and is required by Federal law to serve all users, not just a standard user. Accessible designs can benefit able-bodied users, increasing pedestrian speed and decreasing the potential for pedestrian judgment error. An accessible pedestrian system is cost effective, because it promotes independence for persons with disabilities and reduced need for social services in many cases. It also reduces the cost of the public transit system by allowing persons to use the regular fixed-route system rather than the much more costly paratransit system.

Maintenance of Pedestrian Facilities

Continued maintenance efforts are needed to ensure that pedestrian areas, including bus stops, are in a usable state of repair. This includes keeping sidewalks free of impediments such as branches and roots as well as timely removal of snow and ice in the winter. It also means addressing pedestrians and their safety at construction sites. Regular maintenance and repair is especially important for the elderly and persons with a disability in order to maintain their mobility. For example, if sidewalks deteriorate to the point that panels are cracked or uneven, tripping hazards are created. Local communities should have a sidewalk maintenance program to ensure the timely repair and reconstruction of deteriorated sidewalks. While communities typically have ordinances requiring property owners to clear sidewalks of debris and snow, enforcement is an issue.

Traffic Calming

Traffic calming measures are intended to reduce vehicle speeds, reduce cut-through traffic on local streets, shorten pedestrian crossing distances, and/or draw attention to pedestrian crossings. They encourage drivers to be sensitive to pedestrians and other non-motorized street users. Specific designs include: (1) curb extensions, constructed at intersections, to slow vehicles as they approach the narrower passage and reduce to distance over which pedestrians are exposed to motor vehicle traffic; (2) refuge medians, which allow pedestrians to cross traffic in each direction of travel separately, reducing pedestrian delay and chances of conflict with motorists; (3) traffic circles, formed by curbs constructed at intersections, requiring motorists to slow and maneuver around them; and (4) speed humps, raised areas extending across the street, which slow traffic. The Cities of Madison, Middleton, and Fitchburg are among those that have developed neighborhood traffic management programs to install such devices in problem areas following a neighborhood planning process. The devices are also being incorporated more as part of new developments.

Safety, Public Education

As with bicyclists, pedestrians commonly experience a lack of understanding for their rights from motorists. Many motorists tend to focus only on other motor vehicles and are not attentive to the potential presence of pedestrians, resulting in crashes at intersections, driveways, and in parking lots. Education and outreach efforts focusing on both motorists and pedestrians are needed to promote pedestrian safety and awareness. Motorists need to be made aware of pedestrian rights. Pedestrians need to be taught to be safe, yet assertive (e.g., making eye contact with drivers) in attempting to get drivers to yield the right of way when crossing the street at a crosswalk.

Traffic Enforcement

Enforcement of motorist laws related to pedestrians is minimal due to staff and financial constraints and lack of support from the public and municipal leaders. Traffic enforcement needs to be focused on local streets where most pedestrian/motor vehicle crashes occur.

Institutional, Attitude Impediments

An important underlying problem that is related to all of the issues identified above is a lack of understanding among the general public, including drivers, and many public officials of pedestrian safety issues. Many motorists are unaware of the basic rules of the road regarding pedestrian right of way. Pedestrian transportation and safety concerns are typically a low priority in the allocation of resources for engineering countermeasures, education, and law enforcement. There tends to be a lack of awareness of pedestrian safety problems. Unlike bicycling, which has benefited from an organized and vocal constituency, particularly in the Madison area, walking has not had such a major organizing influence. Although there has been more public interest in and demand for pedestrian accommodations and rights since the landmark Federal transportation legislation, ISTEA, was passed in 1991, a concerted effort is still needed to change attitudes.

Transportation Demand Management (TDM)/Ridesharing

Transportation demand management (TDM) strategies seek to increase higher occupancy travel, especially during weekday peak congestion periods. The goal of TDM actions is to shift travel to higher occupancy (transit, car/vanpool) or non-motorized (bicycle, walking) transportation modes, shift travel to less congested times of the day, and/or reduce or eliminate the need to travel (e.g., through telecommuting). TDM strategies include incentives/disincentives, service improvements, information dissemination and marketing activities, alternative work schedules and sites, and parking management.

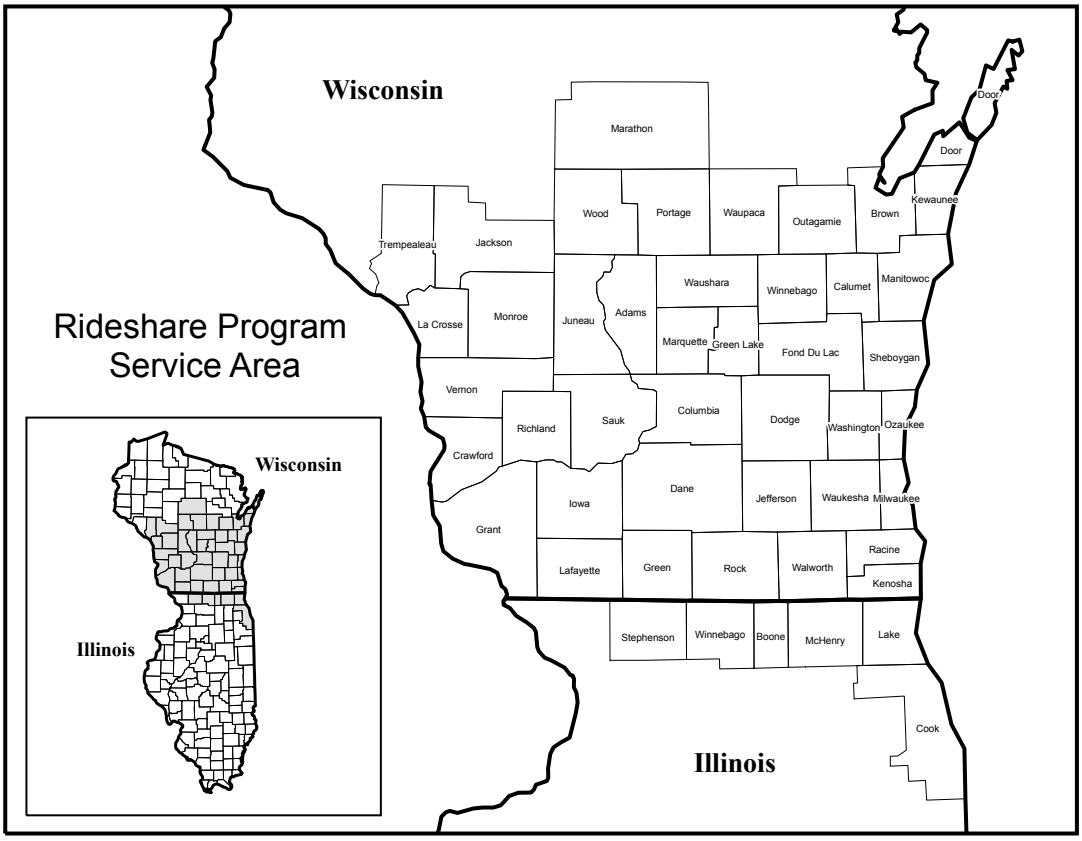
Current TDM Programs and Activities

The Madison Area MPO employs a full-time ridesharing coordinator whose responsibilities include coordinating public and private employer programs, ride-matching services, and staffing a Ridesharing Coordinating Committee, which coordinates the ridesharing and alternative transportation promotion activities of the various governmental agencies involved in such efforts. Along with the MPO, these include the Wisconsin Department of Transportation, Wisconsin Department of Administration, Metro Transit, UW-Madison, Dane County, and the City of Madison.

Madison Area MPO Rideshare Etc. Program

The Madison Area MPO sponsors the Rideshare Etc. program to implement on-site TDM/Ridesharing programs primarily at the larger public and private work sites in the Madison area. Information and assistance is provided to employers to tailor programming activities to their work site and to provide ongoing support. The program maintains a database of over 1,500 carpoolers, as well as information on Metro Transit bus routes, State Vanpool Program routes, Park-and-Ride lots, and bicycle facilities. In addition, marketing materials are distributed, including brochures, displays, and radio messages. In the fall of 2006, Web-based ride matching was added to provide an additional tool for commuters interested in interactively accessing information about alternative modes of transportation for commuting. The Rideshare Etc. program service area covers 48 counties in south central Wisconsin and Northern Illinois (see Figure 33).

FIGURE 33



The employer-sponsored programs generally consist of naming a company ridesharing coordinator, distributing in-house publicity, providing ride-matching services, and setting up a ridesharing booth to be used in conjunction with question-and-answer periods to assist employees to start ridesharing and/or utilize other alternative transportation. Employee surveys are sometimes conducted. Assistance and information is also provided on implementation of incentives/disincentives for employees to use alternative transportation.

Employer-based TDM programs are generally the most effective in reducing single occupant vehicle trips, and work trips are the easiest to shift to alternative transportation modes. TDM strategies can be chosen to meet the specific needs of the employees based upon the worksite characteristics and the employees' demographic and travel characteristics. In addition, a corporate "culture" can be created that reinforces the TDM message.

In 2005, it is estimated that the direct impacts of the Rideshare Etc. program resulted in a reduction of 18.9 million vehicle miles of travel (VMT), over 2,000 required parking spaces, and 47 and 38 tons of smog-producing nitrogen oxide (NOx) and volatile organic compound emissions respectively, and also resulted in savings by workers of over $4.5 million in commuting costs.

Transit Incentives

Commuter Choice Program

Metro Transit offers a Commuter Choice Program whereby employers purchase bus passes or tickets from Metro for their employees. This allows employees to purchase the bus pass/tickets at a pre-tax rate. Employers have the option of subsidizing all or part of the cost of the pass/tickets. Employers benefit through reduced payroll taxes and can deduct the cost of providing the transit benefit as a business expense. Around 25-30 employers currently participate in the program, including the State of Wisconsin.

Group Unlimited Bus Pass Program

This is a program negotiated by Metro with the major universities and employers whereby the university or employer purchases heavily discounted passes for all of its students or employees regardless of whether they choose to participate in the program. The passes are then generally provided to students/employees for free or a modest cost. The price of the passes is based upon anticipated ridership considering the employer location, available bus service, etc. For small employers, the program could be negotiated with a transportation management association, if one were created for an employment site.

Metro has negotiated student bus pass programs with UW-Madison, Edgewood College, and MATC. In the case of UW and MATC, the schools then charge all students a semester fee for the bus pass, which allows unlimited use of all Metro bus routes. The UW program was expanded in 2002 to cover employees, including UW Hospital & Clinics employees. Metro has also negotiated an unlimited ride pass program with the City of Madison and Saint Mary's Hospital for its employees and is in the process of setting up a program for Meriter Hospital employees. Employees receive free bus passes. Metro has also begun discussions with Wisconsin Department of Administration (WisDOA) staff about a possible program for all state employees.

By providing free bus service for all students/employees, the unlimited ride pass program provides a large financial incentive for riding the bus. The incentive is much greater than with the Commute Choice program for employers. Passes are free or heavily discounted and passes are available for all employees versus only those who choose to participate as with the Commute Choice program. This may persuade some employees to try taking the bus, at least on some days. The bus pass programs have been hugely successful in boosting transit ridership.

Smart Commute Initiative

Smart Commute is a loan program that gives homebuyers the chance to qualify for a larger mortgage if they purchase a home along a Metro route. Participating lenders are able to add a portion of the homeowner's potential transportation savings ($200 per month for one wage-earner households, $250 per month for two wage-earner households) to their qualifying income. Program participants are also eligible for other benefits by program sponsors, including a trial membership to Community Car of Madison, a member-based, car sharing organization (see information on next page). There are four banks that currently participate in the program.

Guaranteed Ride Home Program

The Guaranteed Ride Home program provides taxi vouchers to support commuters that use an alternative mode of transportation so they are not stranded at work if an emergency comes up and they need to get home quickly. Research has shown that lack of access to transportation in an emergency has been a barrier to using the bus, carpooling, vanpooling, or bicycling to work.

The program is available to participants in the MPO's Rideshare Etc. Program and is jointly administered by the Madison Area MPO and the Dane County Highway & Transportation Department and funded by the Department. The program provides vouchers good for up to $35 per ride for a maximum of three rides per year. UW-Madison Transportation Services has a guaranteed ride home program for UW employees who do not drive to work. Employees can get a taxicab ride or fleet vehicle escort (for those living more than 30 miles away) up to three times every six months. The Wisconsin Department of Administration also provides transportation home for vanpool participants in emergency situations.

State Vanpool Program

The Wisconsin Department of Administration administers a State Employee Vanpool Program to provide vanpool services to major employment sites. There are currently 72 vanpools in operation with most traveling to downtown and the UW campus. Other destinations include Hill Farms and the Fish Hatchery Road/Greenway Cross area. Riders pay a fare calculated to cover operating and capital costs. A minimum of one state employee is required on each van, but non-state employees are also welcome to ride.

UW-Madison Program

UW-Madison employs a TDM coordinator and has a comprehensive TDM program covering all alternative modes of transportation. The university provides free campus bus service, funds Metro Route 53, which provides park-and-ride service to campus from the UW Research Park, and contracts with Metro for unlimited ride pass programs for employees and students. Bus passes are free for employees, while students pay a low semester student fee ($35 for 2006-'07) for the pass. The UW Medical School provides frequent shuttle service between the hospital and the East and West side UW clinics. UW also has a flex parking system for many lots whereby employees receive a refund for days they do not park on campus.

Bicycle Programs

Assistance is available to employers on how to facilitate the needs of bicycle commuters as well as how to promote and encourage bicycling. The Madison Area MPO ridesharing coordinator provides bicycle maps and other information as part of employer-sponsored programs and works with the City of Madison's Bicycle Program Coordinator. The Wisconsin Bicycle Federation is also available as a resource and has conducted employer programs in the past as part of grant projects. UW-Madison employs a Bicycle Coordinator to promote bicycling on campus. The university also has a bike ambassador program to promote bicycling and walking through a variety of avenues such as safety clinics, bike maintenance/repair classes, and bike tours. Dane County has a limited number of bicycle lockers available for rent downtown. The City of Madison has bicycles available for use by city employees. Metro Transit has bicycle racks on all its buses and they are very popular and heavily used.

Community Car Program

Community Car is a member-based car sharing organization that provides cars by the hour for individuals and organizations. Members share access to a fleet of high gas-mileage and hybrid gas-electric vehicles located in reserved parking spots in the central Madison area. Car sharing is for people who do not need a car every day and are able to walk, bus, bicycle, or carpool for the majority of their transportation needs.

Parking Management

Studies have shown that the availability of free parking is one of the most important factors in an employee's decision on whether or not to use an alternative mode of transportation to work. This was confirmed in interviews conducted with Madison and Milwaukee area employers as part of a 2002 WisDOT-sponsored study evaluating subsidized transit passes, pre-tax transit benefits, and parking cash-out programs in Wisconsin.[11]

Managing parking supply and cost is most feasible downtown and on the UW-Madison campus due to limited land availability. It also may be possible at other high intensity activity/ employment centers with structured parking. However, parking management is a complex balancing act. Parking policies that discourage solo driving help to mitigate traffic congestion downtown and the quality of the neighborhoods. They also reduce the need for the city and university to provide expensive parking facilities, using up limited land. On the other hand, adequate provision must be made for parking that is not too expensive in order for the city to maintain downtown as a retail and employment center and for the university to attract and keep qualified employees.

Downtown Madison Parking

The City of Madison owns five downtown parking ramps and four surface parking lots with a total combined parking capacity of around 3,850 spaces. Dane County owns a downtown parking ramp with a capacity of 1,000 spaces and the State of Wisconsin owns the Monona Terrace Convention Center ramp with a normal capacity of around 550 spaces. In addition, there are numerous private parking facilities downtown that offer daily and monthly parking.

The most recent public parking capacity additions include the construction of the convention center ramp and the addition of 400 spaces in the State Street-Capitol (Dayton) ramp. A new mid-State Street ramp has been proposed on the Buckeye parking lot site off Gorham Street, but no agreement has been reached on project details. The City is also exploring the possibility of combining the ramp with a mixed-use development.

Around 10% of the parking spaces in the City of Madison ramps and lots are reserved. Monthly parking rates for these spaces vary by location from $100 to $133. The city also charges an extra $15-$23 per month to non-residents. By comparison, in 1980 the monthly rate was $49. The rate for non-reserved spaces in the parking ramps is $0.70 to $1.10 per hour, depending upon the ramp. Three increases in parking rates have been instituted since 2002 in order to generate revenue for the planned reconstruction of the Government East ramp and construction of a planned mid-State Street ramp. There are waiting lists for the monthly spaces at the ramps, however the city has limited the number of monthly spaces as part of its policy to encourage downtown commuters to use alternative modes of travel. The parking rate at the Dane County ramp for non-employees is $0.75 per hour. The parking rate at the Convention Center ramp for non-employees is $1.10 per hour with a daily maximum of $12.50. Qualifying state employees who do not receive an assigned parking space as part of their employment pay $74 per month.

Rates at private parking ramps in the downtown area are comparable. Most of those on or near the Square (e.g., Block 89, U.S. Bank, ULI) have somewhat higher rates. However, many of the employers in these buildings subsidize parking for their employees.

[11]Evaluation of Short-Term Transportation Demand Management Strategies, prepared by Cambridge Systematics for the Wisconsin Dept. of Transportation (Oct. 2002).

The percentage of people using the City of Madison ramps that are long-term parkers (over 5 hours) varies from a low of 17% at the State Street-Capitol ramp to a high of 69% at the Capitol Square North ramp, according to a November 2002 survey. Overall, 31% of ramp users are long-term parkers. The State Street-Campus and State Street-Capitol ramps are heavily used by UW and MATC-Downtown Campus students. The Dane County ramp is used mostly by downtown workers, while the Convention Center ramp is used by state employees, other downtown workers, and people attending events there.

Occupancy rates for the non-reserved parking spaces at the City of Madison ramps varied from a low of 59% at the Civic Center ramp to a high of 97%-99% at the State Street-Campus and Government East ramps. The occupancy rates at the Capitol Square North and State Street-Capitol ramp were 83% and 86% respectively. The occupancy rates at the Civic Center and State Street-Capitol ramps have declined significantly since Alliant Energy Co. moved out to the American Center in the spring of 2002.

The City of Madison has a preferential parking and carpool program in all of its ramps. Under the program, persons on the waiting list for monthly parking spaces who are carpoolers are given priority when spaces become available.

The City of Madison has adopted a policy whereby it will enter into a long-term lease with property owners/employers for parking spaces in its public parking ramps on the condition that the employer implement a transportation demand management (TDM) program that includes financial incentives to use alternative transportation modes. The policy was created in response to a request by North Square Associates—which manages the new Mullins Office Building on the Square—to enter into a long-term lease of 60 parking stalls at two public ramps for use by Physicians Plus Insurance Corporation employees. Because the parking ramps have been funded with tax-exempt bonds, Federal law prohibits the city from leasing more than 10% of the spaces in the ramps. Since then, the Fiore Companys, which owns the Network 222 building, has also entered into a long-term lease for 65 spaces in the Civic Center ramp.

The City has a residential parking permit program for central/UW campus neighborhoods in order to prevent commuter parking on residential streets. A permit does not guarantee a resident a parking spot, however, and several CBD permit parking areas have more permits issued than the number of on-street parking spaces available.

University of Wisconsin Campus Parking

There are close to 13,000 permitted parking spaces on the UW campus to accommodate 18,000+ employees. Demand exceeds supply and there is a waiting list for parking permits. There are also a limited number of spaces for students commuting from outside the transit service area. The number was just recently increased with the construction of the parking ramp next to Nielson Tennis Stadium. The university policy is to maintain the current ratio of spaces to employees.

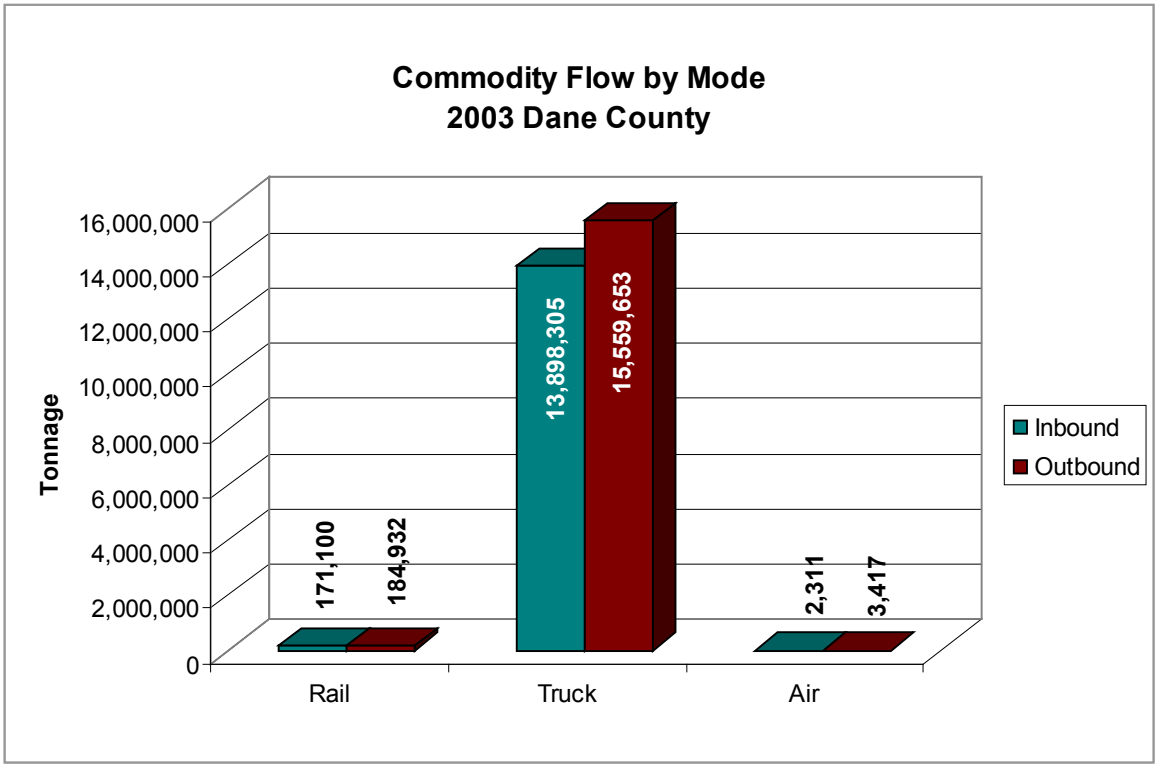
A 2003 parking and traffic study for the growing West campus area found that current parking supply meets the demand, but that new construction (some of which will eliminate existing parking) will result in a parking deficit of around 1,200 spaces by 2011, assuming current parking demand ratios. This is based on a projected increase in employees (to 10,850) and a 77% increase in patient/visitors (to 2,300). To accommodate this demand, the university recently constructed a 1,285-space parking facility just east of Nielson Tennis Stadium near the UW Clinical Science Center.

Parking fees are used to provide funding for the construction and maintenance of parking facilities as well as subsidizing alternative transportation options and programs (e.g., free campus bus, free employee bus passes). The UW has increased its parking permit rates campus-wide in recent years in order to help funding new parking facilities and manage the demand for spaces. The cost for academic year permits for high-demand lots is $695. Surface lot annual permits are $445. Permits for gated lots and reserved parking for specific departments are $1,035. Parking meters on campus are $1 per hour. The flex parking in-car meter rate is $0.75 per hour with a $6 minimum daily charge.

Overall Freight Movement

Around 14.07 million tons of goods were shipped into Dane County and 15.75 tons of goods shipped out of the county in 2003, according to the U.S. Department of Transportation Commodity Flow Survey. Truck is the dominant mode of transportation for freight movement in the county. Around 98.8% of total inbound and outbound freight tonnage processed in the county was carried by truck in 2003. About 1.2% was carried by rail and only a small fraction of one percent carried by air. See Figure 34 showing the inbound and outbound commodity flows by mode for the county in 2003. The importance of air freight is understated somewhat by comparing the amount of commodities in weight versus value. High value, low weight commodities tend to be shipped by air.

FIGURE 34

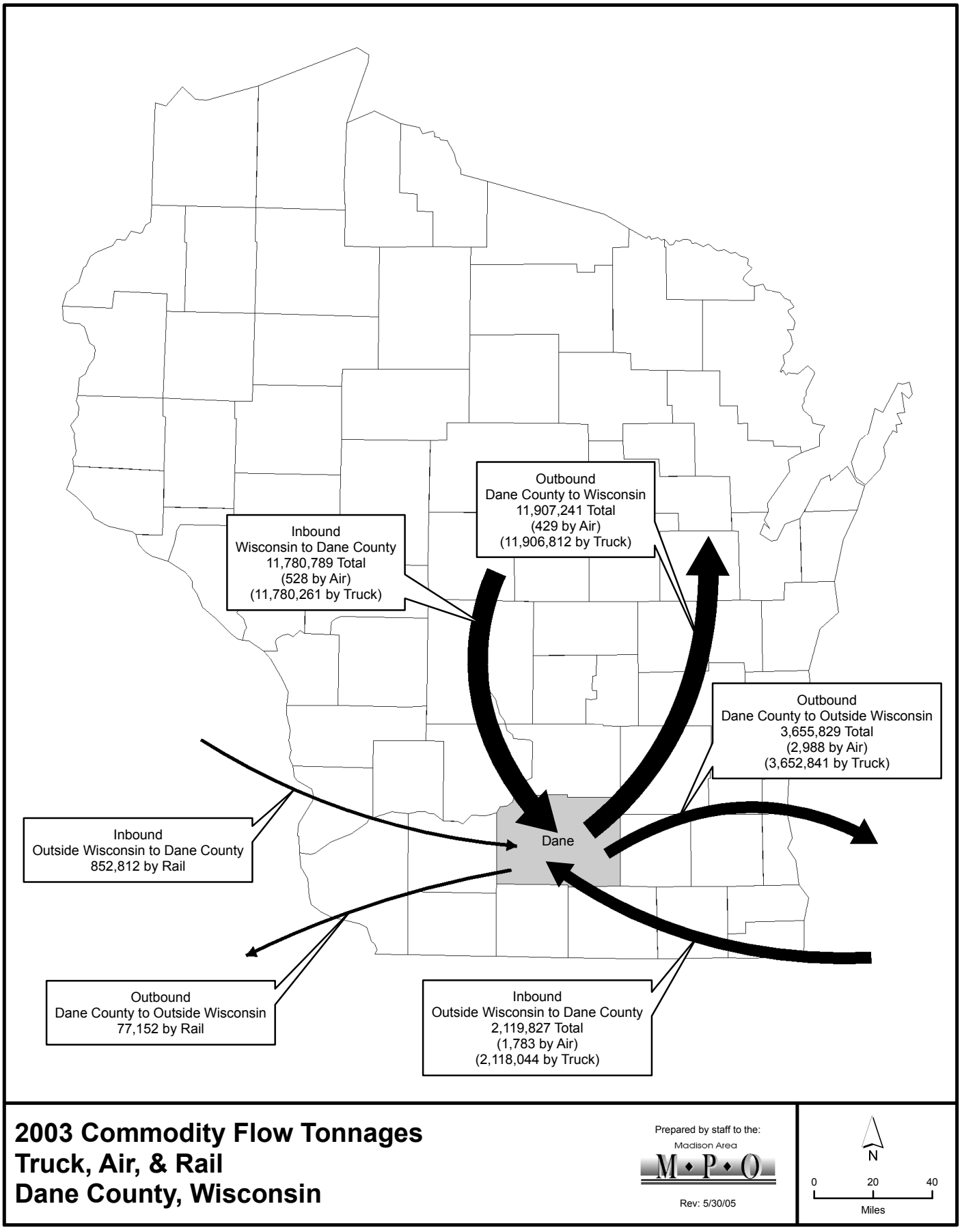


The total tonnage of outbound freight exceeded that of inbound freight by 11.9%. The tonnage of outbound freight was greater than inbound freight for all modes of transportation.

Around 84% of all inbound commodities came from within the state, while 76% of all outbound commodities were shipped within the state. Nearly all of the freight carried intra-state was transported by truck. Around 77% of the inbound commodities and 87% of the outbound commodities transported by air were shipped inter-state. All of the commodities transported by rail were shipped inter-state. See Figure 35, on the next page, illustrating 2003 inter- and intra-state commodity flow tonnages.

Table 22, on page 107, lists inbound, outbound, and total tonnages, as well as commodity share of total tonnages, for products originating or terminating in Dane County in 2003. The largest share of inbound and outbound commodities included: food or kindred products; nonmetallic minerals; secondary traffic ("other" products); petroleum or coal products; clay, concrete, glass or stone products; and chemicals. Farm products also represented a substantial share of outbound commodities.

FIGURE 35



2003 Commodity Flow Tonnages
Truck, Air, & Rail
Dane County, Wisconsin

Prepared by staff to the:
Madison Area
M • P • O

Rev: 5/30/05

N

0 20 40
Miles

TABLE 22
INBOUND AND OUTBOUND COMMODITIES (ALL MODES), DANE COUNTY, 2003

Commodity	Tonnage			Commodity Percent of Totals		
	Inbound	Outbound	Total	% of Inbound	% of Outbound	% of Total
Apparel or o/finished textile products	8,651	3,404	12,055	0.06%	0.02%	0.04%
Chemicals	1,535,470	1,578,119	3,113,589	10.91%	10.02%	10.44%
Clay, concrete, glass, or stone products	1,650,172	1,419,976	3,070,148	11.73%	9.02%	10.30%
Coal	2,105	0	2,105	0.01%	0.00%	0.01%
Crude petroleum, natural gas, or gasoline	32	0	32	0.00%	0.00%	0.00%
Electrical machinery and equipment	54,958	86,515	141,473	0.39%	0.55%	0.47%
Fabricated metal products	198,690	89,301	287,991	1.41%	0.57%	0.97%
Farm products	166,555	1,450,460	1,617,015	1.18%	9.21%	5.42%
Food or kindred products	2,287,747	3,102,292	5,390,039	16.26%	19.70%	18.08%
Forest products	6	10	16	0.00%	0.00%	0.00%
Fresh fish or other marine products	66	0	66	0.00%	0.00%	0.00%
Furniture or fixtures	30,703	84,088	114,791	0.22%	0.53%	0.38%
Hazardous	0	0	0	0.00%	0.00%	0.00%
Instruments - photographic or optical goods	7,335	15,110	22,445	0.05%	0.10%	0.08%
Leather or leather products	607	18	625	0.00%	0.00%	0.00%
Lumber or lumber products	823,775	263,102	1,086,877	5.85%	1.67%	3.64%
Machinery o/than electrical	61,012	94,506	155,518	0.43%	0.60%	0.52%
Mail and express	609	1,593	2,202	0.00%	0.01%	0.01%
Metallic ores	100	0	100	0.00%	0.00%	0.00%
Miscellaneous manufacturing products	17,894	29,351	47,245	0.13%	0.19%	0.16%
Nonmetallic minerals	2,730,328	1,780,857	4,511,185	19.40%	11.31%	15.13%
Ordnance or accessories	5	56	61	0.00%	0.00%	0.00%
Petroleum or coal products	1,523,835	1,775,941	3,299,776	10.83%	11.28%	11.07%
Primary metal products	175,622	27,717	203,339	1.25%	0.18%	0.68%
Printed materials	142,500	195,683	338,183	1.01%	1.24%	1.13%
Pulp, paper, or allied products	926,849	461,549	1,388,398	6.59%	2.93%	4.66%
Rubber or miscellaneous plastics products	27,347	7,004	34,351	0.19%	0.04%	0.12%
Secondary traffic ("Other" products)	1,456,979	2,345,836	3,802,815	10.35%	14.90%	12.75%
Textile mill products	9,322	7,811	17,133	0.07%	0.05%	0.06%
Tobacco products	0	0	0	0.00%	0.00%	0.00%
Transportation equipment	163,468	277,351	440,819	1.16%	1.76%	1.48%
Waste or scrap materials	68,976	650,352	719,328	0.49%	4.13%	2.41%
Total	**14,071,718**	**15,748,002**	**29,819,720**	**100.00%**	**100.00%**	**100.00%**

Source: WisDOT Commodity Flow Data

While data on the mode of transport for the various commodities is not available, it is known that a very large share of the commodities transported by rail consists of farm products, coal, and waste or scrap materials. Commodities transported by air include mail and express, machinery other than electrical, and farm products.

Freight Facilities

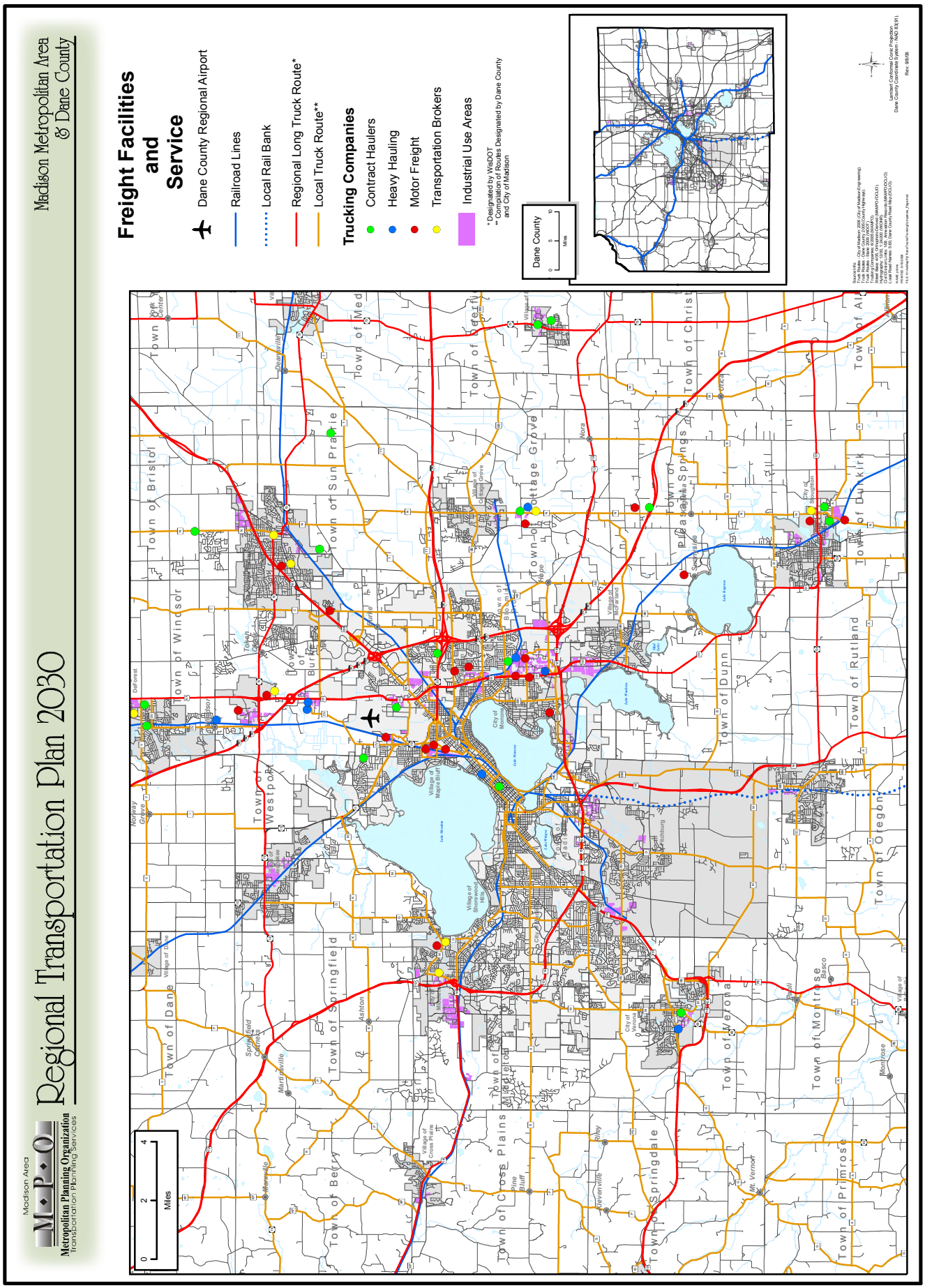
Trucking

Truck Routes and Companies

The Interstate system and other U.S. highways make up the bulk of the major regional or long distance truck routes in Dane County. These include Interstate 39/90, Interstate 94, USH 151, USH 12, USH 14, USH 12/18, and USH 51. Other state and county roadways designated as regional truck routes by the Wisconsin Department of Transportation include STH 19, STH 30, STH 73, STH 78, STH 138, CTH PB, and CTH N between I-39/90 and USH 51 in Stoughton. This system of truck routes is supplemented by a local system of truck routes. Figure 36, on the next page, shows the entire system of truck routes in the county along with other freight facilities and service.

Trucking companies in the county include contract haulers, heavy haulers, motor freight companies, and transportation brokers that prepare documents and make arrangements for freight shipments. Figure 36 shows the location of trucking companies in the county as well as the industrial use areas that generate freight. Some companies perform more than one function. The map shows the concentration of trucking companies and industrial areas on the East side of the metro area and in particular the USH 51 corridor with its quick access to the Interstate system. Almost all of the industrial areas are located off the major long distance truck routes.

FIGURE 36


Madison Area
M•P•O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area
& Dane County
Freight Facilities
and
Service
Dane County Regional Airport
Railroad Lines
Local Rail Bank
Regional Long Truck Route*
Local Truck Route**
Trucking Companies
Contract Haulers
Heavy Hauling
Motor Freight
Transportation Brokers
Industrial Use Areas
* Designated by WisDOT
** Designated by City of Madison, Designated by Dane County and City of Madison
Dane County
0
5
10
Miles
0
2
4
Miles

Rail

Figure 36 also shows the location of the rail network in the county. The short-line carrier Wisconsin & Southern Railroad Company is the principal or only operator on all of the rail lines except the portion of the Canadian Pacific (CP Rail) Railway line that runs from Madison north through DeForest. CP Rail is a mainline operator. Another mainline operator, Union Pacific/Southern Pacific, used to operate in Dane County on the old Union Pacific rail line running south of Madison to Evansville. Freight rail service has been discontinued from that line. The City of Fitchburg and the Village of Oregon purchased the rail line in 1999 with a grant from WisDOT to serve a planned joint business/industrial park.

Three rail transit commissions have been created in southern Wisconsin to preserve rail service or the potential for rail service, and to influence policies on the future use of rail corridors if rail service is discontinued. Dane County belongs to two of these commissions—the South Central Wisconsin Rail Transit Commission (SCWRTC) and the Wisconsin River Rail Transit Commission (WRRTC).

The WRRTC has an operating contract with Wisconsin & Southern Railroad Co. for rail freight service on the publicly owned east-west rail corridor. Freight rail service was terminated on the publicly owned north-south rail corridor from Madison to Monroe in 1996. The Wisconsin Department of Natural Resources (WisDNR) has entered into an agreement with the SCWRTC and WisDOT to operate a recreational trail and take over management responsibilities for the rail corridor. The portion of the trail from the county line to the Town of Oregon is currently being constructed.

Air

The Dane County Regional Airport (DCRA) is the second largest airport in the state and is served by two air freight airlines along with eleven commercial air carriers. Around 24 million pounds of freight and mail passed through the airport in 2005. Products that have high value (e.g., diagnostic and medical equipment), short life cycles (e.g., certain farm products), are time critical, and are relatively light weight are best shipped by air.

The DCRA has the capability for expanding ground facilities to accommodate the growth of air cargo operations to meet future needs. Recent and ongoing improvements to the airport's runways and taxiways serve not only air passenger growth but air cargo carriers as well.

Intermodal

Intermodal facilities provide access and service by more than one type of freight carrier (e.g., rail/truck, barge/truck). There are no intermodal facilities in Dane County.

Air Transportation

The Dane County Regional Airport (DCRA) is owned by Dane County with oversight by the Dane County Airport Commission. The Commission is appointed by the Dane County Executive and consists of nine members with five selected from the Dane County Board of Supervisors and four citizen members.

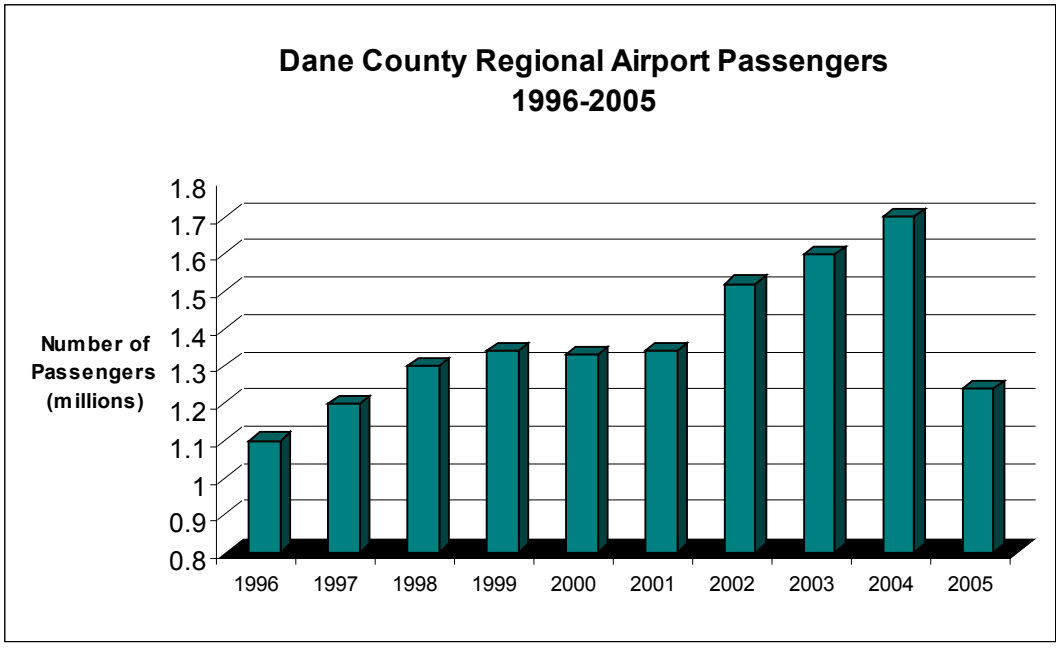
The DCRA is located on the City of Madison's North side between CTH CV (Packers Avenue) USH 51 (N. Stoughton Road). The airport is accessed primarily from CTH CV via International Lane. The airport can also be accessed from USH 51 via Anderson Street, which intersects International Lane. There is potential in the future for an additional more direct access point off CTH CV via Government Road.

Metro bus service to the airport was improved in January 2004. Direct weekday service is now provided from the North Transfer Point with 30-minute peak and 60-minute off-peak frequencies. Service runs from 6:30 a.m. to 10:30 p.m. on weekdays. There is currently no weekend service.

The DCRA is a vital link to the national air transportation system for residents and businesses of the county and south central Wisconsin. It is the second largest airport in the state, providing service to commercial air passenger and air cargo carriers, and for general aviation and the military. The airport is served by eleven (11) commercial air carriers with over 100 scheduled flights per day, and two air freight airlines. Major non-stop destinations are Chicago (O'Hare), Milwaukee, Minneapolis, Detroit, St. Louis, Cincinnati, Denver, Cleveland, Memphis, Newark, Las Vegas, Washington, D.C., Dallas/Ft. Worth, Atlanta, and New York-LaGuardia Airport. There are around 115,000 annual aircraft landings and takeoffs (60% general aviation, 34% commercial, 6% military).

In 2005, the airport had 1.24 million passengers, a 27% decrease from the record setting passenger total in 2004 of 1.7 million. The number of passengers had been steadily increasing prior to the drop in 2005, growing 55% between 1996 and 2004. See Figure 37.

FIGURE 37



Construction work on a major terminal expansion and remodeling project was completed in 2005, increasing the passenger terminal's square footage from 126,000 in 2001 to 278,000. The increased space has been used to expand the airlines' operations and commuter areas, add a baggage claim carousel, and accommodate a new commuter security checkpoint. The airport will be expanding the parking ramp in 2007. The expansion will be phased, but will ultimately double the capacity of the ramp.

The terminal and parking ramp expansion projects were among the recommendations of a 20-Year Landside Master Plan completed in 1999. The Master Plan also recommended realigning the inbound lanes of the International Lane approach to the main terminal in order to allow more surface parking and two-tier traffic at the front of the terminal in the future (with arrivals on the second level and departures on the ground level). The International Lane realignment project has been implemented.

The airport has a Part 150 Noise Abatement Plan and has completed most of the recommendations in that plan, including construction of a new runway (3/21). The main north-south runway (18/36) was reconstructed in 2000. The airport is in the process of implementing a project to provide required safety areas to the north for the main runway (18/36) and to the northwest for Runway 13/31. The project involves the relocation further west and north of CTH CV, the airport perimeter road, Starkweather Creek, and the Soo Line Railroad. Runway 13/31 will be extended around 600 feet to the northwest.

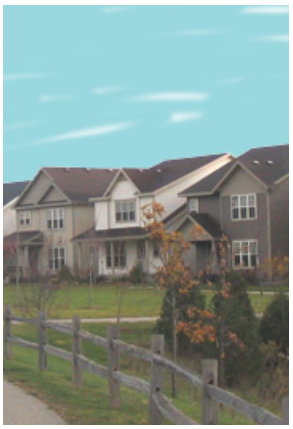
In addition to the DCRA, the county is served by the Middleton Municipal Airport-Morey Field and Blackhawk Airfield in the Village of Cottage Grove. Both are general aviation airports serving smaller aircraft used for business and charter flying and for personal reasons. The Federal Aviation Administration (FAA) has designated both as reliever airports for the DCRA. The role of reliever airports is to reduce congestion at commercial service airports by providing general aviation pilots with alternative landing areas.

Reconstruction of Morey Field was completed in 2005. The airport now has a 4,000 x 100 foot runway, a turf crosswind runway, and a new terminal building. It is located along Airport Road, just west of the USH 12 interchange. The Blackhawk Airport is threatend due to development pressure and its future is in doubt.

The Wisconsin Department of Transportation (WisDOT) adopted the *Wisconsin State Airport System Plan 2020* in 2000. The system-level plan provides a framework for identifying the number, location, and type of aviation facilities required to serve the state's aviation needs over the next twenty years. According to the plan, the number of commercial air passengers at the DCRA is expected to increase 58% from 2000 to 2020. It was determined that the DCRA and other commercial air passenger airports can accommodate this increase in passengers through modest increases in service frequencies and in aircraft seating capacities.

A detailed analysis of current and forecast levels of general aviation activity in the Dane County region was also conducted as part of WisDOT's Airport System Plan. The plan recommends that DCRA continue to implement improvements called for in its Master Plan and construct a new parallel general aviation runway. The plan also recommends that Morey Airport in Middleton be maintained and improved to fullfill its role as a reliever airport to the DCRA.

Part 2: Regional Transportation Plan 2030



Land Use Assumptions and the Plan Development Process

Land Use Assumptions and the Plan Development Process

Travel demand is dependent upon the location and densities of land use development, since the need for transportation stems from our need to access goods, services, and other people within and beyond the region. Therefore, the formation of a regional transportation system plan must start with projections of future growth and the allocation of that growth within the region. This determines the potential demand for transportation between various points within and outside the region. At the same time, transportation investments can also affect land use development by improving mobility within and between certain areas of the region and increasing the accessibility of areas (e.g., through addition of an interchange). This transportation/land use connection must also be considered.

Formulation of Goals and Policy Objectives

The first step in any planning process is the formulation of goals and objectives, which then guide the design and preparation of the plan. Goals generally state the desired outcome, while policies and objectives outline strategies and specific actions identified to achieve the goals. Because the distinction between more general policies and more specific objectives is sometimes difficult to make, they have been combined as "policy objectives." Goals and policy objectives were developed for the overall transportation system, land use and transportation system coordination, and the different elements of the transportation system. They are outlined in the following section of the plan.

One of the key objectives in terms of the plan development process relates to how roadway traffic congestion will be managed. All mobility options (transit, ridesharing, bicycling, walking) and operational strategies (Intelligent Transportation Systems, Travel Demand Management, Transportation Systems Management) will be considered before undertaking major capacity expansion (i.e., addition of general purpose travel lanes) projects. In addition, a higher level of congestion (generally Level of Service D) during peak travel periods will be accepted as a means of both encouraging use of alternative transportation modes and stretching limited funding for improvements. This approach is integrated into the MPO's Congestion Management System (CMS) discussed beginning on page 49 of the plan.

Inventory of Land Use, Socio-Economic, and Travel Characteristics and Trends and the Transportation System

Preparation of forecasts of future growth and travel must begin with inventorying current land use development and socioeconomic and travel characteristics and trends as well as the current state of the transportation system, including motor vehicle traffic volumes and congestion on the roadway system and transit ridership.

A comprehensive countywide 2000 land use inventory was conducted by Dane County Regional Planning Commission (DCRPC) and Madison Area MPO staff. The land use inventory is always conducted at the beginning of each decade to coincide with the decennial Census, which provides data on population, households, employment by type, school enrollment, household income, vehicle ownership, and other socioeconomic characteristics of the population that are key factors in determining both overall travel demand and propensity to use public transit. Other data sources included a comprehensive 1999 countywide database of employers developed by MPO staff and information on recent and planned future developments obtained from City of Madison and other local planning departments.

Madison Area MPO staff uses small traffic analysis zones (TAZs) covering the entire county for the collection and analysis of the land use and socioeconomic data. There are over 1,000 TAZs countywide. The size and shape of the TAZs are based on factors such as existing and planned land use characteristics, natural boundaries and travel barriers (e.g., rivers, major roadways, rail corridors), U.S. Census Block boundaries, and travel production and attraction potential.

Transportation inventories completed for the regional transportation plan update included a comprehensive household travel survey of over 2,000 Dane County households conducted in 2001 as part of the National Household Transportation Survey (NHTS) and an origin-destination (O/D) survey conducted in 2000 on all arterial roadways leading into Dane County. Wisconsin Department of Transportation (WisDOT) staff conducted these two surveys. MPO staff also collected journey-to-work data from the Census Transportation Planning Package (CTPP). These three data sources provided important information on regional travel patterns both for intra- and inter-county trips. 1999/2000 traffic count data and 1990-2000 traffic growth data was prepared for all arterial and collector roadways using data collected by WisDOT and the City

of Madison Traffic Engineering Division. Existing traffic congestion levels on the arterial and collector roadway system were then calculated based upon the observed traffic volumes and roadway capacities, using the regional TRANPLAN (TP+) travel simulation model. Transit ridership data at a system, route, and bus stop level was also obtained.

All of this data on land use, socioeconomic, and travel characteristics and the transportation system was summarized in Part I of the plan.

Growth Forecasts and Allocation

The next step in the planning process following the development and analysis of land use, socioeconomic, and transportation inventories is the preparation of forecasts of future population, households, and employment for the planning horizon year and the spatial allocation of this future growth around the planning area. The planning horizon year for this regional transportation plan update is 2030 and the planning area is the entire county. The MPO for the Madison area has traditionally always prepared countywide plans even though the MPO planning area does not cover the entire county. Regional travel patterns show the interdependence of the central and outer Dane County areas as well as Dane County and adjacent counties.

The 2030 Dane County population and household forecasts prepared by the Wisconsin Department of Administration's (WisDOA) Demographic Services Center were used as control totals. This total county population and household growth was then sub-allocated down to the urban service areas (USAs) and rural areas of the county based primarily on the forecasts prepared by DCRPC staff (See Figure 4 on page 21, which shows the USAs). Some minor adjustments were made to USA forecasts prepared by the DCRPC based upon municipal population forecasts prepared by WisDOA.

MPO staff worked with DCRPC staff to prepare a Dane County employment forecast. The employment forecast was based upon a labor supply forecast, using WisDOA's 2030 population forecast by age group.[12] The forecast assumes an increase in the labor force participation rate and a continuing increase in commuting into the county from workers residing in adjacent counties. MPO staff then allocated the forecast county employment to the urban service areas (USAs) based primarily on the USA population forecasts. In other words, the same countywide percentage change in the ratio of population to employment from 2000 to 2030 was assumed for each USA. Adjustments were made in some cases (i.e., allocating more or less employment in relation to population) based upon local land use plans, the location of planned employment centers, the change in the population/employment ratio for each USA from 1990 to 2000, and professional judgment.[13] A small amount of employment was also allocated to the rural areas.

Table 23, on the next page, shows the 2000 and forecast 2030 population and employment for the central urban service area (CUSA), urban service areas (USAs) for cities and villages in central Dane County, USAs for outer county villages, and the very small or limited USAs and rural unsewered areas.

Countywide Composite of Local Land Use Plans

The next step in the process was to allocate the 2030 forecast population, households, and employment by USA and the rural areas down to the traffic analysis zone (TAZ) level. In order to do this, MPO staff obtained the most recent comprehensive plans and neighborhood development plans from communities in the county and prepared a composite land use map of planned future growth (See Figure 38, on page 120). Adjustments from local plans were made in a few cases to maintain consistency with regional land use plan goals and objectives, in particular that urban development occur within urban service areas where the full range of urban services can be provided.

The comprehensive land use plans for many cities and villages provide for more than 25-30 years of growth. The allocation of forecast 2030 growth constituted far less than a build out scenario of the planned growth shown in Figure 38. For example, the allocation of growth to City of Madison peripheral neighborhoods constituted around 60% of the planned population and households and 70% of the planned employment based upon the recommended densities in the neighborhood development plans. For many suburban communities, allocated 2030 growth constituted 50% or less of planned population and households and less than 40% of planned employment. Where plans included information on the phasing of development, that information was used in the growth allocations.

[12] A trend forecast was initially prepared, but dismissed as not realistic due to the large percentage of the population ("baby boomers") that will reach retirement age during the planning period. Realization of the trend forecast would have required an unlikely massive in-migration of workers.

[13] Reliable employment data at the municipal or USA level was not available prior to 1990.

TABLE 23
2030 FORECAST POPULATION AND PLACE OF WORK EMPLOYMENT BY URBAN SERVICE AREA

Urban Service Area	2000		2030		2000-2030 Change			
	Population	Employment	Population	Employment	Population Change		Employment Change	
					Number	Percent	Number	Percent
Central Urban Service Area (CUSA) (includes Cities of Madison, Fitchburg, and Middleton, Village of Shorewood, Maple Bluff, and McFarland, and Town of Madison)	268,854	228,317	341,250	296,800	72,396	27%	68,483	30%
Other Central Dane County USAs (includes Cities of Sun Prairie, Stoughton, and Verona, and Villages of Waunakee, Cottage Grove, and Oregon, and the Northern USA (DeForest/Windsor))	70,244	32,009	127,100	56,450	56,856	81%	24,441	76%
Outer Dane County USAs	22,194	9,725	34,495	14,238	12,301	55%	4,513	46%
Other Small, Limited USAs and Rural Areas	65,234	14,965	77,155	15,112	11,921	18%	147	1%
Dane County Total	426,526	285,016	580,000	382,600	153,474	36%	97,584	34%

In terms of redevelopment in the City of Madison, the assumed land use scenario allocates over 5,200 new households with a population of over 9,100 and over 3,100 new jobs to the downtown and greater Isthmus areas. These numbers are generally consistent with assumptions in the City of Madison's comprehensive plan. The growth was allocated based on building permits issued since 2000, planned and approved development projects, and planned redevelopment areas identified in the City's comprehensive plan. Most of the employment was allocated to the East Isthmus rail corridor area. As part of the Transport 2020 (East-West Transit Corridor) Study, MPO staff will work with the study consultants and City of Madison staff to develop a "transit-oriented development" scenario that assumes an even greater amount of development and redevelopment around the planned rail transit stations.

Major Employment/Activity Centers

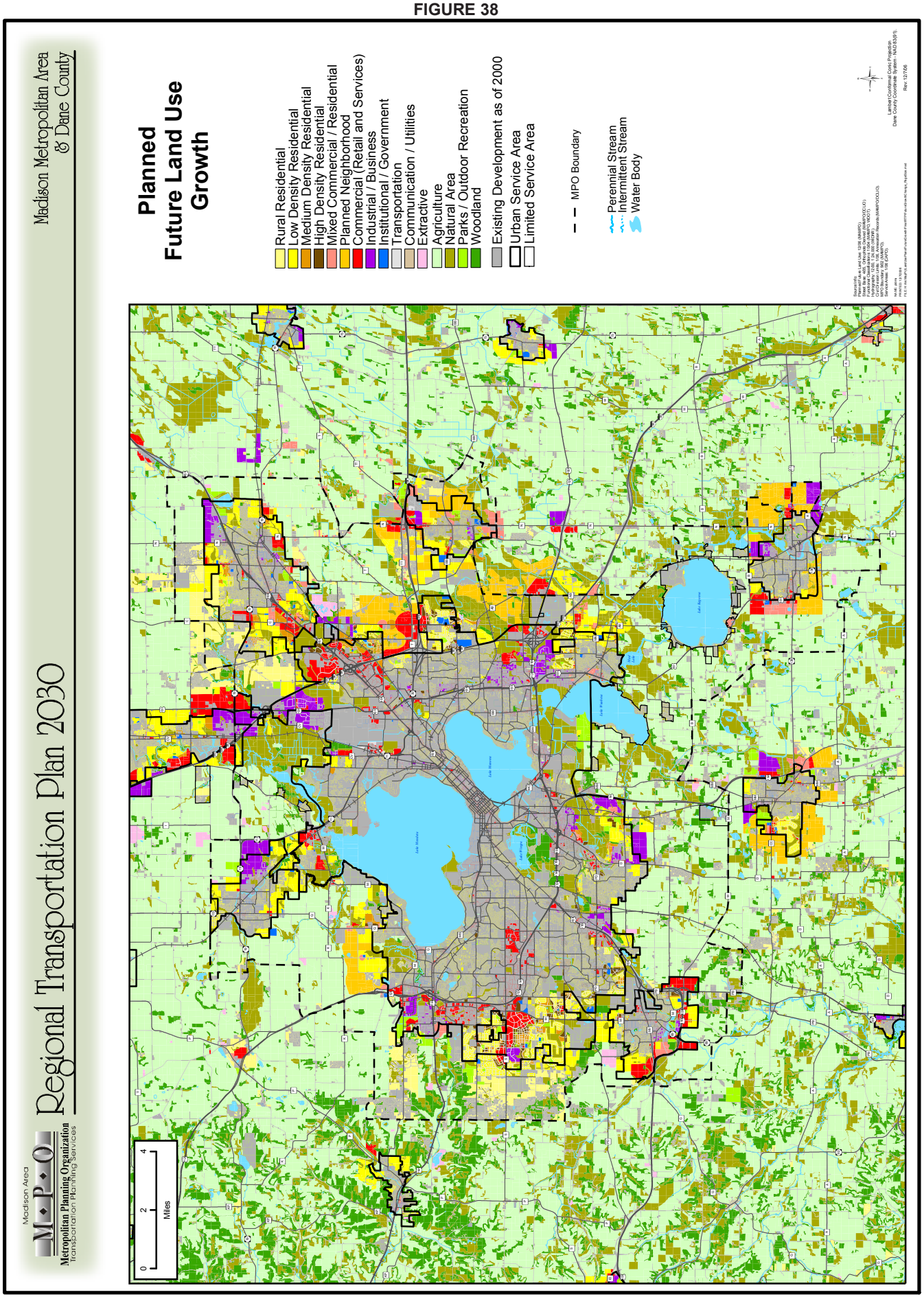
A concept carried forward from the previous 1997 *Dane County Land Use & Transportation Plan (Vision 2020)* is that of Major Employment/Activity Centers. This concept recognizes major concentrations of existing and projected employment and commercial activity. These concentrations of relatively intensive or large-scale mixed land uses result in the generation of large numbers of trips, requiring significant investments in transportation and other public facilities and services. At the same time, these centers can be effectively served by pubic transit, particularly if they are developed or redeveloped with higher densities, mixed land uses, and pedestrian-friendly designs.

Many of the existing centers have not been designed in this fashion, but plans call for new centers such as the new UW Research Park in the City of Madison's Pioneer Neighborhood and Green Tech Village in Fitchburg to be more transit-supportive. There is also potential in the future for redeveloping some of the existing centers such as the West Towne and East Towne areas to be more transit-supportive as well. Development of higher density, mixed-use centers makes more efficient use of the transportation system and also provides persons with more choices to live and/or work in places where they have convenient transportation alternatives to the automobile.

The regional land use plan seeks to encourage development in these major activity centers, particularly for large-scale and region-serving activities as a means to maximize utilization of public facilities already in place. This also reduces the need to extend and improve transportation and other public facilities to serve new centers at unanticipated locations. The more numerous and dispersed these centers are, the more difficult they are to serve with public transit.

The major regional employment/activity centers are the downtown Madison and UW-Madison campus areas, which have the highest concentration of employment as well as major cultural, entertainment, and special event destinations. These centers are expected to remain the region's primary activity hubs despite the fact that most employment and commercial growth over the last 25+ years has been in emerging centers on the urban periphery and these centers are expected to account for most future growth. Other major activity/employment centers on the West side include the greater UW Hospital & Clinics, Hilldale Shopping Center area, UW Research Park, greater West Towne area, Old Sauk Trails Office

FIGURE 38


Madison Metropolitan Area
& Dane County
Regional Transportation Plan 2030
Madison Area
M•P•O
Metropolitan Planning Organization
Transportation Planning Services
Planned
Future Land Use
Growth
Rural Residential
Low Density Residential
Medium Density Residential
High Density Residential
Mixed Commercial / Residential
Planned Neighborhood
Commercial (Retail and Services)
Industrial / Business
Institutional / Government
Transportation
Communication / Utilities
Extractive
Agriculture
Natural Area
Parks / Outdoor Recreation
Woodland
Existing Development as of 2000
Urban Service Area
Limited Service Area
MPO Boundary
Perennial Stream
Intermittent Stream
Water Body
0
2
4
Miles

Park/Greenway Center area, and Middleton Business Park. Two future centers, including a new UW Research Park, are planned in the Pioneer Neighborhood in the Mineral Point Road corridor. Other major activity/employment centers on the East/Northeast side include Oscar Mayer, MATC Truax campus and business park area, greater East Towne area, and the American Center/High Crossing area.

Figure 39, on the next page, shows all of the existing and future major regional employment/activity centers along with their project 2030 employment. The map illustrates the natural east-west transit corridor that exists connecting many of the existing and planned employment/activity centers. This general corridor includes around 80% of 2000 employment in all of Dane County as well as around 63% of the county population.

The Madison Area MPO Travel Simulation Model

The Madison Area MPO uses a TRANPLAN (TP+) regional travel simulation model for analysis of existing transportation conditions and forecasting future transportation conditions. As part of the regional transportation plan development process, this model was updated to use the TP+ software package and expanded countywide. Consultants were hired by WisDOT to assist MPO staff in updating the model and validating it using 2000 base year land use, socioeconomic, and travel data that was described above. A validated model is one that can accurately replicate existing traffic patterns and trip-making characteristics. Validation ensures that the model provides a firm foundation for forecasting future traffic conditions.

The regional travel simulation model is actually a set of different models for each of the four steps of the traditional modeling process (trip generation, trip distribution, mode choice, trip assignment) with computerized procedures used to systematically forecast travel patterns in response to changing land use development patterns, roadway and transit systems, and demographics. The model estimates shared and single occupancy motor vehicle trips, transit trips, and non-motorized trips, and assigns the motor vehicle and transit trips to roadway and transit networks in the model. Various statistics can then be calculated on the performance of the transportation system, including motor vehicle miles and hours of travel, traffic congestion levels (volume to capacity ratio) by roadway segment, and peak and non-peak period transit ridership by mode (rail, express bus, local bus) and route.

Travel Demand Modeling Scenarios

Following preparation of the 2030 growth forecasts and allocation of this growth down to the traffic zone analysis level, this data was coded into the regional travel simulation model. A series of future roadway and transit scenarios were then prepared to develop future year 2030 travel forecasts and evaluate the performance of the transportation system under these scenarios.

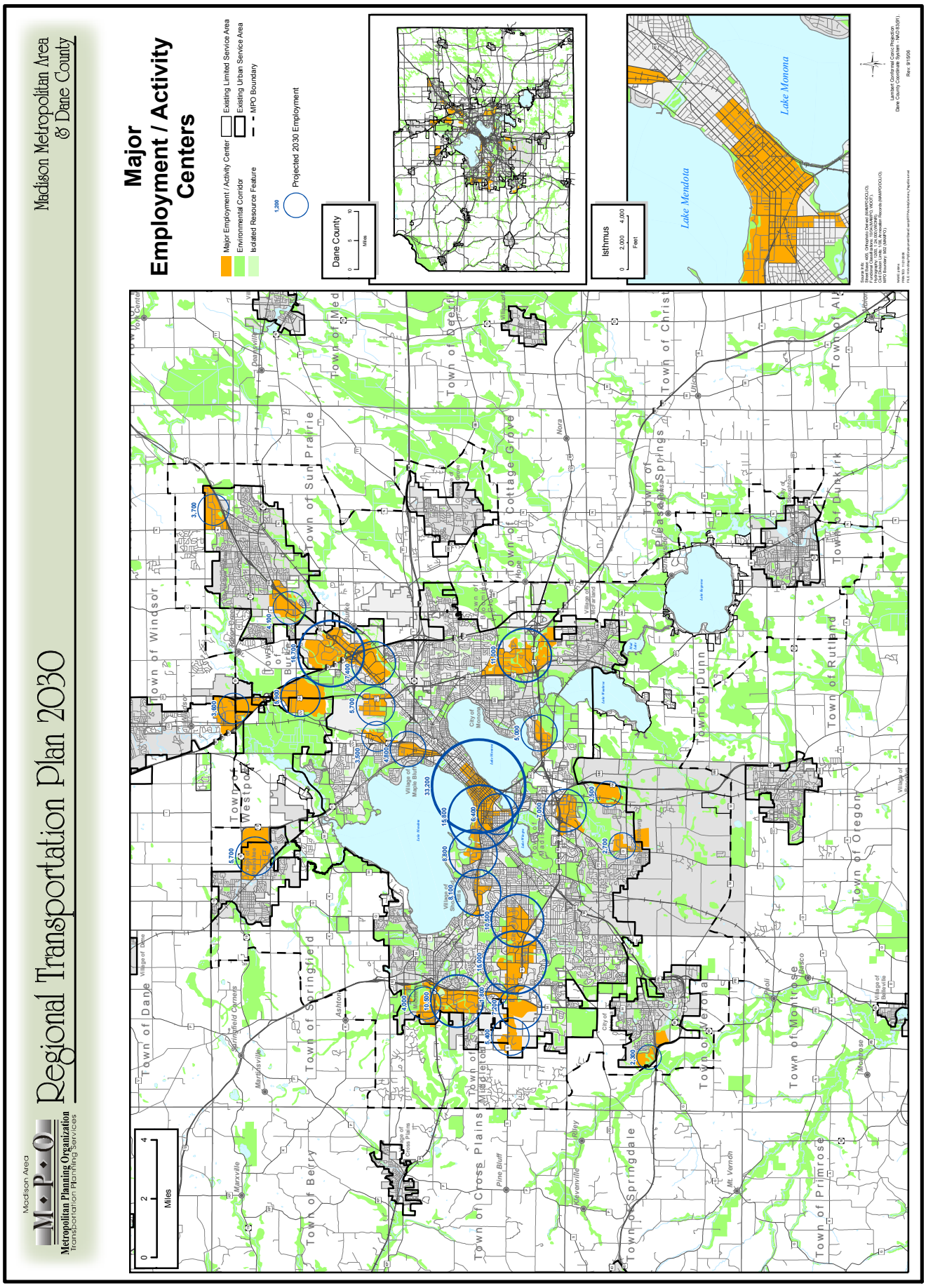
Existing plus Committed Projects

The first transportation scenario tested was the existing system plus roadway and transit capacity expansion projects with committed funding in the current 2006-2010 Transportation Improvement Program for the Dane County Area. The programmed roadway projects are listed in Table 24 on page 135 of the plan report. The transit projects included commuter bus service from the West Transfer Point to the City of Verona and Epic Systems' new campus and commuter service from the City of Sun Prairie to the North Transfer Point.

Transit Scenarios

Two major transit service expansion scenarios were then tested to determine how much future forecast motor vehicle traffic could be reduced prior to consideration of any roadway capacity improvements. The first transit scenario included: (1) Local bus service improvements recommended in the 2004-2008 Transit Development Program for the Madison Urban Area, including a new route connecting the South and East Transfer Points around the Southeast side, and new peripheral routes to serve developing neighborhoods; and (2) New express bus service from outlying cities and villages and peripheral urban area neighborhoods to the downtown/UW campus area with most routes providing through service that connects the transfer points. The second transit scenario modeled was a hybrid rail system in the East-West Transit Corridor with complementary express bus service and the local service improvements included in the first scenario. The hybrid rail system, which can run both on-street and on the rail line, includes two segments on both ends connecting Greenway Cen-

FIGURE 39


Madison Metropolitan Area & Dane County
Regional Transportation Plan 2030
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Major Employment / Activity Centers
Major Employment / Activity Center
Environmental Corridor
Isolated Resource Feature
Existing Limited Service Area
Existing Urban Service Area
MPO Boundary
Projected 2030 Employment
Dane County
Isthmus
Lake Mendota
Lake Monona
Miles
Feet

ter in Middleton and the new UW Research Park (west of the Beltline off Mineral Point Road) on the West side and the airport and Sun Prairie on the Northeast side. The hybrid rail system is one of the alternatives being considered as part of the Transport 2020 Study. The Transport 2020 Study is evaluating a starter system, however, while the MPO tested a more fully developed system.

While the travel model accounts for non-motorized trips, it does not have the capability to forecast changes in these trips based upon changes in the pedestrian and bicycle systems or pedestrian-friendly development designs. The travel model also cannot account for transportation systems management (TSM) strategies (e.g., ramp meters on the Beltline) or most travel demand management (TDM) strategies. However, the potential impacts of these strategies were also considered.[14]

Roadway Scenarios

To meet remaining traffic congestion needs after implementation of an aggressive expansion and improvement of the transit system, a series of roadway improvement scenarios were considered.

The first roadway scenario included new two-lane collector street connections and extensions that help complete the "grid" street network, thereby distributing traffic as efficiently as possible. These included the following:

- New crossing of Interstate 94 west of Gaston Road
- Milwaukee Street extension to Gaston Road
- Extension of Eastpark Blvd. in the American Center to Portage Road
- Extension of Thompson Road across USH 151 to O'Keefe Avenue in Sun Prairie
- Extension of West Main Street in Sun Prairie from CTH C to Rattman Road
- Extension of Watts Road across the Beltline to Odana Road at Research Park Blvd.
- Extension of S. High Point Road from Mid-Town Rd. to Raymond Rd., connecting to southern segment of street
- Extension of Fitchrona Road from Nesbitt to McKee Road (CTH PD)
- Extension of Post Road from Fish Hatchery Road to existing Post Road
- Mid-Town Road realignment to connect directly to Raymond Road[15]
- Extension of Elderberry Road from existing terminus to Pleasant View Road

The second roadway scenario included local arterial roadway capacity expansion projects recommended in the 1997 Regional Transportation Plan. Almost all addressed areas of high existing or forecast traffic congestion. The exceptions were segments of Reiner/Sprecher Road on the East side and Pleasant View Road on the West side, which are important for connectivity purposes. Reiner/Sprecher Road will be done in phases with the segment from Interstate 94 to Buckeye Road already programmed with local funds. The following is the full list of projects:

- CTH M (West) (Mineral Point Road/CTH S to Cross Country Road)
- Mineral Point Road/CTH S (Beltline to Junction Road/CTH M)[16]
- Mineral Point Road (Junction Road/CTH M to Pioneer Road)
- McKee Road/CTH PD (Maple Grove Road to CTH M)
- Pleasant View Road (Mineral Point Road to USH 14)
- Reiner/Sprecher Road (USH 151 to USH 12/18)
- Cottage Grove Road (S. Thompson Drive to Sprecher Road)
- Lien Road (City View Drive to Reiner Road)

The scenario also included a capacity expansion on STH 19 between Sun Prairie and Waunakee, which was also recommended in the 1997 plan.

The third roadway scenario included all of the above projects and the North Mendota Parkway, which would include expanding to four-lane, 55 mph facilities STH 19 (Interstate 39/90 to STH 113) and STH 113 (STH 19 to CTH M) and expanding CTH M to a four-lane, 45 mph facility from the recently built four-lane segment west of STH 113 over to USH 12 at the Parmenter Street interchange. The segment from CTH K to USH 12/18 would be on new alignment.

[14] The model is sensitive to changes in fuel and parking costs. The impact on transit ridership of an increase in parking costs was tested in the earlier phase of the Transport 2020 Study.
[15] This project was modeled at four lanes.
[16] This would be expanded from four to six lanes. All others would be expanded to four lanes.

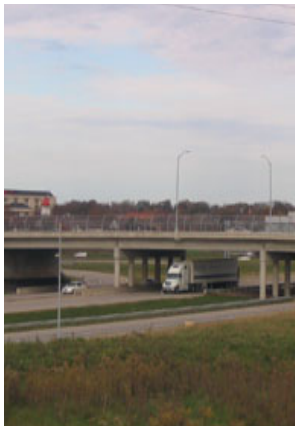
The fourth scenario included all of the above-listed projects plus the Verona Road/West Beltline project, expanding to six lanes both Verona Road north of McKee Road (CTH PD) and the Beltline from Verona Road to USH 14.

The fifth scenario analyzed the impact of additional interchanges on USH 14 at relocated Lacy Road in Fitchburg and on USH 12/18 at CTH AB.

Based upon the analysis from these modeling scenarios, the financial capacity analysis, and consultation with WisDOT and local officials, the recommended draft plan was developed and modeled to identify remaining areas of congestion that need to be addressed as part of the Congestion Management System (CMS). The recommended plan carries forward all of the local arterial capacity expansion projects from the 1997 plan.

The plan also includes capacity expansions to Interstate 94 (I-39/90 to CTH N) and Interstate 39/90 (USH 12/18 to County line), which show significant congestion and are important for inter-regional travel. The USH 51 project from north of STH 19 to CTH V is also included and addresses an identified need. While the modeling analysis showed a high level of congestion on Verona Road (CTH PD to Beltline), the Beltline, and USH 51 (Interstate to USH 12/18), no specific capacity expansion projects are included in the plan for these roadways because they are the subject of currently ongoing corridor studies. The specific improvement and funding sources for these projects(s) have not been determined. It is anticipated that the plan will be amended in the future to incorporate project recommendations generated from these corridor studies.

The plan includes a capacity expansion on CTH M (North) from Willow Road to CTH K. This is a part of the North Mendota Parkway project concept. The entire project is not included because an environmental study is needed for the western end of the parkway, which would be on new alignment, and funding has not been identified for the project.



Goals, Policy Objectives, Key Plan Concepts, and Recommendations/Implementation Strategies

Goals and Policy Objectives, Key Plan Concepts, and Recommendations/Implementation Strategies

The plan goals and policy objectives outlined below guided the design and preparation of the plan, and will continue to provide a policy framework for decision-making for the overall transportation system following plan adoption.

The goals and policy objectives are organized into three sections. The first section covers the overall transportation system. It includes the plan's overall goal of an integrated and balanced land use and transportation system (see Goal #1 below) and a second goal describing the desired characteristics of the transportation system. The second section addresses land use and transportation coordination. The third section includes the different elements of the transportation system. Policy objectives describing strategies for achieving the goals follow in each section. Key plan concepts are also discussed.

Recommendations/implementation actions follow the goals and policy objectives for land use and transportation coordination and each element of the transportation system. They include facility recommendations and planning and program actions for carrying out the goals and policy objectives. The primary implementing agencies and/or organizations are noted for each recommendation.

Overall Transportation System

Goals

#1 Integrated Transportation and Land Use System

Develop an integrated and balanced land use and transportation system which provides for the efficient, effective and safe movement of people and goods, promotes the regional economy, supports transportation-efficient development patterns and the regional land use plan, and provides mode choice wherever possible while enhancing and, where relevant, preserving the character and livability of the neighborhoods where transportation facilities are located.

#2 Transportation System Characteristics

Achieve a transportation system that is:

Balanced – provides a range of transportation options and takes advantage of the inherent efficiencies of each mode.

Accessible – serves all areas of the region and all residents and visitors.

Efficient – maximizes mobility provided by existing and new facilities through systems and demand management strategies.

Safe – designed, built, and operated to minimize risk of harm to persons and property, and allows persons to feel confident and secure in and around all modes of travel.

Reliable – minimizes and alerts persons to unexpected travel delays.

Equitable – provides an equitable level of service and benefits among demographic and user groups, including low-income, minority, the elderly, and persons with disabilities.

Interconnected – provides for ease of transfer between the different modes of travel.

Environmentally responsible – minimizes negative environmental impacts and energy consumption to the extent feasible.

Supportive of compact and efficient patterns of development – integrates transportation and land use planning in support of transportation efficient development (e.g., walkable neighborhoods, transit-oriented activity centers) that maximizes travel, housing, and employment choices.

Supportive of the social and economic activity of the region – provides convenient travel for all persons and efficient movement of goods.

Responsive to community needs and neighborhood impacts – is flexible and adaptable and addresses negative impacts, particularly in residential areas.

Economically viable and financially stable – is cost efficient and financially feasible with sufficient ongoing financial support for operations and maintenance.

Policy Objectives

#1 Public Involvement
Attain an area-wide transportation planning process responsive to the needs and interests of area-wide residents, groups, units of government and affected agencies, with sufficient opportunity for all to participate in policy and implementation decisions.

#2 System Preservation
Maintain the region's transportation infrastructure and preserve transportation corridors, particularly rail corridors, for possible future travel uses by other modes.

#3 Accessibility and Mobility
Improve regional mobility and accessibility for all persons while maintaining a balance between the two sometimes competing concerns.

#4 Safety
Improve transportation safety through design, operations and maintenance, system improvements, support facilities, public information, and law enforcement efforts.

#5 Balanced System
Achieve a balanced transportation system through investment in improvements across all modes of travel.

#6 Management/Operations
Apply Intelligent Transportation Systems (ITS) technologies and utilize Travel Demand Management and Transportation Systems Management (TSM) strategies to respond to traffic congestion, make efficient use of existing roadway capacity, and make the transportation system more reliable, convenient, and safe.

#7 Land Use/Transportation Connection
Use public decisions on the provision of publicly financed transportation facilities and services as a tool for creating compact, well-designed and balanced communities.

#8 Timing of Improvements
Stage the extension and expansion of urban transportation services within urban service areas, to encourage compact urban growth in accord with regional and local development plans and policies.

#9 Congestion Management
Consider all mobility options and operational strategies (ITS, TDM, TSM) in congested corridors before adding capacity for general purpose travel lanes or building new facilities.

#10 Interconnected System
Encourage and facilitate connections between various modes of travel, including connections with inter-city bus and rail.

#11 Design
Encourage attention to aesthetics in the design of transportation improvements to fully integrate improvements into the environment, including consideration of scenic views and vistas, landscaping (with use of native species where possible) along roadsides and boulevards, and the location of signing.

#12 Intergovernmental Coordination
Continue to enhance intergovernmental coordination in land use and transportation planning, project development, and operations and maintenance to ensure protection of transportation investments and make efficient use of limited resources.

#13 Basic Services
Support and maintain basic transportation services such as maintenance, snow removal, traffic control, street sweeping, and other services.

#14 Freight
Enhance mobility and safety for goods movement to support the local economy while maintaining community livability.

#15 Financial Feasibility
Ensure that existing and future financial resources are realistic, reliable, and equitable.

Land Use and Transportation System Coordination

There is a close inter-relationship between land use development and the transportation system. The location, type, and intensity of development determine the need for transportation facilities and services. The region's land use development pattern plays an important role in determining the viability of mode choice options and the safety and efficiency of the transportation system. At the same time, transportation strategies can support the regional land use plan, the preservation of neighborhoods, and minimize undesirable impacts from the transportation system on the environment. The following goal, policy objectives, and recommendations/implementation strategies address this land use – transportation connection.

Goal: Coordinate land use and transportation planning and decision-making in a manner that fosters compact urban development patterns that support and are supported by a balanced, safe, and efficient transportation system.

Policy Objectives
#1 Promote the development of balanced communities with sufficient commercial, industrial, residential, and open space land to meet the needs of existing and future residents.

#2 Support and maintain downtown Madison as the region's major activity center and seek greater diversity and vitality in that area.

#3 Encourage the concentration of higher density, mixed-use, pedestrian-friendly employment/activity centers at nodes and along transit corridors to maximize the efficiency of the existing and future transportation system.

#4 Encourage the redevelopment of established employment/activity centers, transit corridors, and other areas, where appropriate, in order to make efficient use of existing transportation infrastructure, expand job-housing choices, improve pedestrian and bicyclist safety and accessibility, and support transit service.

#5 Encourage mixed-use neighborhoods with pedestrian-friendly centers or focal points (e.g., shopping district, community center, park, etc.) and higher density residential uses closest to these centers and transit routes, thus facilitating shorter trips that make walking, bicycling, and public transit to be more convenient and effective transportation alternatives.

#6 Encourage land use development patterns and site designs that maximize the safety and efficiency of the transportation system.

#7 Provide non-interchange crossings of limited access roadways to improve mobility and access for motorists, transit users, bicyclists, and pedestrians in coordination with local land use development planning.

#8 Encourage intergovernmental cooperation concerning land use and transportation issues.

Recommendations/Implementation Strategies
#1 Continue undertaking a reform or modernizing of land use development ordinances and engineering standards (e.g., street design) to remove regulatory barriers that prevent the design of compact, mixed-use, pedestrian-friendly development. [Local governments]

The City of Madison is planning to undertake a comprehensive revision of its existing zoning ordinance. Special emphasis will be placed on creating new mixed-use zoning districts, a traditional neighborhood development (TND) district, and zoning standards for transit-oriented development (TOD). Many other area communities have begun the process of reforming their land use ordinances to remove barriers to mixed use, pedestrian-friendly development.

#2 Consider requiring or using incentives for providing transit, bicycle, and pedestrian improvements in new commercial, public, mixed-use, and multi-family residential developments. [Local governments]

#3 Work with Metro Transit staff to ensure that new developments are planned and designed to be transit-supportive and include transit support facilities, wherever appropriate and feasible. [Local governments, Metro Transit]

#4 Adopt transit-oriented development (TOD) zoning, where appropriate, such as in areas identified as likely rail transit station sites in the Transport 2020 and Streetcar studies and other key transit corridors. [City of Madison and other local governments]

Key Plan Concepts

The following are key plan concepts designed to achieve the overall transportation system and land use – transportation system coordination goals and policy objectives. The concepts address the transportation system in a multi-modal manner and inform the mode-specific goals, policy objectives, and recommendations/implementation strategies that follow.

Growth Area and Activity Center Linkage

The plan seeks to maintain mobility and accessibility options throughout the region. Figure 40, on the next page, illustrates how the major employment/activity centers and cities/villages in the Madison Area are interconnected by the present system of arterial and collector roadways, and how these centers and communities can be served with a potential rail and express bus system with park-and-ride lots. As the outlying communities continue to grow, rail service could be extended in the future.

Balanced Transportation

The plan strives to increase use of travel alternatives to driving alone and to minimize demand on the transportation system during peak travel periods. This is especially the case for work trips to central Madison and for school trips. This makes more efficient use of roadway capacity and provides mobility choices for those who wish to use other modes rather than an automobile or who do not have access to an automobile. This plan also recognizes that the majority of trips within the region will still be made by automobile for shopping and business, and that modifications to the roadway system will be needed.

Traffic Accommodation

The plan continues to accept somewhat higher traffic congestion levels (Level of Service D), particularly during peak hours. This is intended as a means of encouraging travel during off-peak periods, greater use of transit and carpooling, and lessening the need for expanding streets and roadways. Travel on circumferential routes (such as the South Beltline) is accommodated as a means to draw travel to these corridors wherever possible. Techniques of traffic engineering and safety improvements are made to make existing streets and roadways more efficient in moving traffic. Higher mobility levels are also maintained on the Interstate System and other key circumferential routes to ensure efficient movement of people and goods throughout the region.

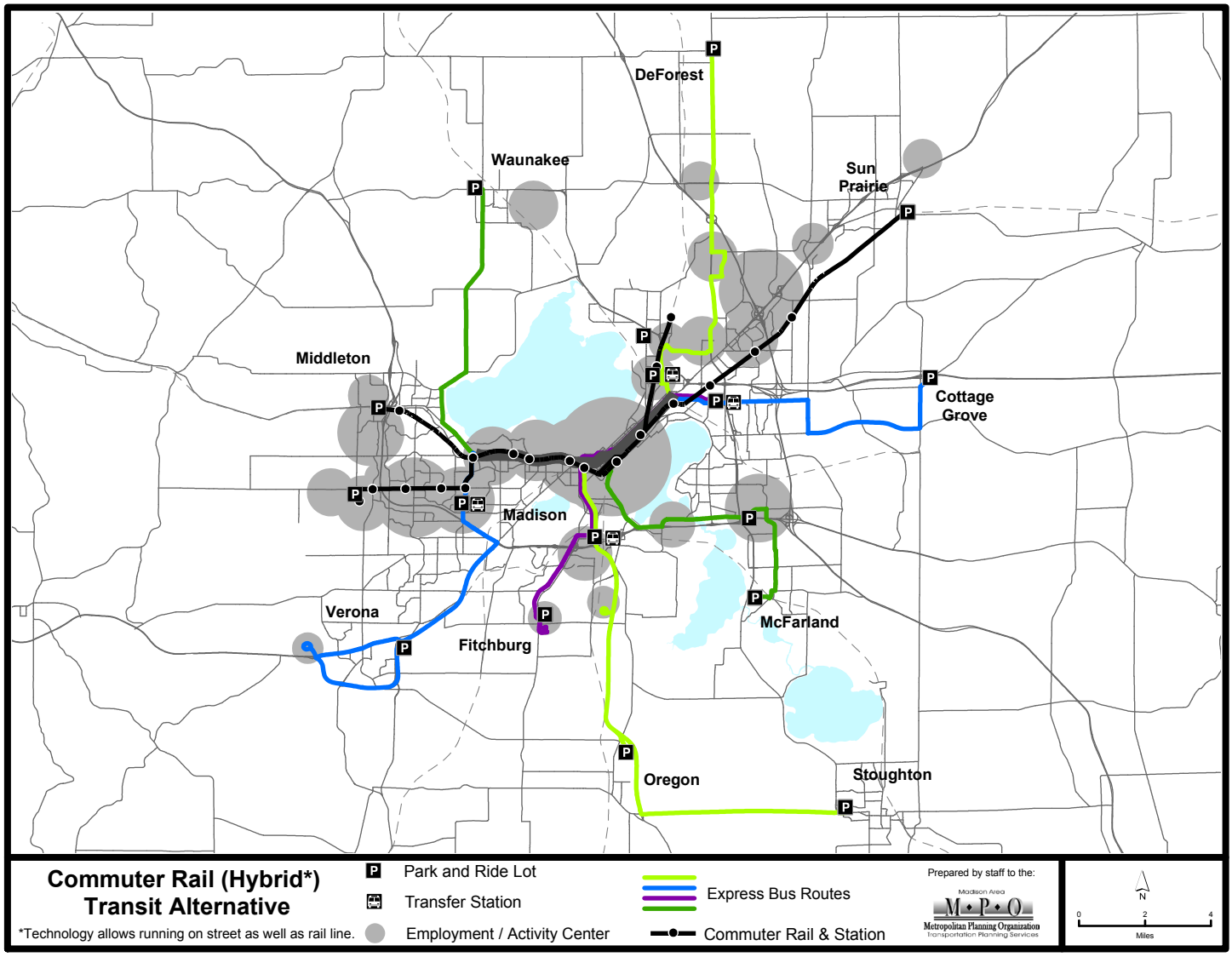
Traffic Direction

The plan seeks to draw local auto through-traffic to local arterial major travel corridors as a way to reduce the amount of through-traffic penetrating central Madison neighborhoods and other neighborhoods in the region. Maintaining mobility on key regional routes like the Interstate System and the Beltline is also important in order to direct inter-regional through-traffic to these corridors to reduce the potential of inter-regional travel on the local arterial system. Traffic calming and other transportation system management (TSM) techniques are encouraged to reduce and/or redirect traffic from local neighborhood streets and other sensitive areas. Bypasses around outlying cities and villages are also considered, while at the same time making sure that such facilities do not have negative land use impacts.

Other Plan Concepts

The plan seeks to broaden the understanding of the other modes of transportation and to recognize and encourage: pedestrian and bicycle travel; specialized travel needs of the elderly and persons with disabilities; taxi and paratransit services; and integration of travel into multi-modal corridors. In addition, the plan seeks to highlight the importance of preserving corridor lands, particularly rail corridors, for possible future travel uses.

FIGURE 40



Transportation System Elements

The following goals, policy objectives, and recommendations/implementation strategies address the different modes of transportation, travel demand management (TDM), inter-regional travel, freight, parking, and corridor preservation.

Streets/Roadways

The street and roadway system improvements needed to serve forecast growth over the next 25 years is dependent on the number of person trips generated by future land use development, the distribution of those trips, and the number of those trips that can be accommodated by alternatives to single-occupant vehicle driving or shifted to off-peak time periods.

Currently, around 80% of person trips by City of Madison residents and 90% of trips by other county residents are taken by automobile. The average vehicle occupancy for person trips by all county residents ranges from 1.13 for work trips to 2.21 for social/recreational trips with an overall average of 1.94. The majority of the remaining trips are made by walking, accounting for 14% of trips by Madison residents and 7% of trips by other county residents. Public transit and bicycling together account for 6% of trips by Madison residents and 3% of trips by other county residents. Travel characteristics and trends presented in Part 1 of this plan such as average trip lengths, the increasingly dispersed travel pattern, and increased solo occupant vehicle commuting, demonstrate the challenge of increasing the percentage share of trips made by alternative transportation modes.

The process for developing the growth forecasts and land use assumptions and forecasting future travel using the regional travel simulation model was described in the previous section of the plan starting on page 117. The forecast countywide increases in population (153,500 or 36%), households (71,500 or 41%), and employment (97,600 or 34%), coupled with the assumptions concerning the distribution and density of this growth, are expected to result in a 43% increase in trip-making by the Year 2030.

Roadway capacity expansion projects were only considered after modeling the impacts of implementation of an aggressive expansion and improvement of the transit system, including a hybrid rail system (see discussion of transit improvements in the Transit section on page 144). The modeling also accounts for non-motorized trips (walking and bicycling) and assumes that the current levels of bicycling and walking would continue to expand proportionately with future growth. The regional travel model is unable to account for the impacts of travel demand management (TDM) and transportation system management (TSM) measures, but the potential impacts of these strategies were also considered.

To address the remaining roadway congestion after implementation of transit system improvements, a series of roadway improvements were tested starting with construction of new two-lane collector street connections and extensions to complete the "grid" street network and progressing to major arterial capacity expansion projects. More information on these scenarios is provided on pages 123-124.

Based upon this modeling, a financial capacity analysis, and consultation with WisDOT and local officials, roadways were identified for potential capacity expansion by 2030. These recommended capacity expansion projects are listed in Table 24 on page 135 and illustrated in Figure 41 on page 134. In almost all cases, these roadways are forecasted to become congested or very congested by the Year 2030. There are some roadway segments (e.g., CTH AB from Cottage Grove Road to USH 12/18) that are included for connectivity purposes. There are also some roadways identified for official mapping rather than a capacity change on Figure 41 that are nonetheless included in the table (e.g., Pioneer Road) as potential projects in the last time period of the plan. These are projects that might be needed should development occur in those areas faster than anticipated at this time. Projects already programmed are listed in Section 1 of Table 24 and the additional potential projects are listed in Section 2, on page 136.

Section 1 of Table 24 also includes a list of studies on state roadways. State roadway studies listed include the two USH 51 corridor studies and the USH 18/151/West Beltline Study, which are looking at potential capacity expansion projects (addition of general purpose travel lanes and/or new or reconfigured interchanges) as well as shorter term TSM/safety improvements. Because the specific type of capacity expansion project, if any, is unknown at this time for these state roadways, they are not included in the list of potential capacity improvement projects in Table 24. Once those studies are completed, specific capacity improvement project(s) are identified, regional agreement is reached on the projects, and funding is identified, the plan will be amended to add the project(s). Another study listed is the environmental study of the western end of the proposed North Mendota Parkway, which would run in a new corridor from CTH M to USH 12. Because of the uncertainty over the routing and the fact that funding has not been identified for this project, it is not included in the "financially constrained" plan, except for the segment from Willow Road west to CTH K.

Section 5 of Table 24 also (page 138) includes a short list of "illustrative" capacity expansion projects needed based upon the traffic forecasting, but without identified funding. These projects are therefore not part of the "financially constrained" plan. The North Mendota Parkway is included in this list. A plan amendment would be required in the future for these projects to proceed if federal funding is involved. They could still proceed with local funding.

Implementation of the recommended capacity expansion projects will result in a significant reduction in the system-wide levels of current and projected future congestion. However, even with these local arterial projects and any potential state roadway projects that come out of the current corridor studies, traffic congestion will still remain on numerous roadways. This includes in particular the arterials leading into the Isthmus area. Figure 41, on page 134, shows these remaining areas of congestion. Congestion on these and other roadways will need to be addressed with congestion management strategies (TDM, TSM, transit service and bicycle facility improvements) as part of the Congestion Management System (CMS) process. See page 49 of the plan for a description of the CMS process and strategies.

In addition to capacity expansion projects, Table 24 also lists roadways recommended for "system preservation" (reconstruction or resurfacing without a capacity expansion). Those already programmed are included in Section 3 (page 137) and the additional projects are included in Section 4 (page 138). The system preservation project list is not a complete one and doesn't include any projects in the last time period (2021-2030) due to insufficient data. The MPO plans to work with FHWA, WisDOT, and local units of government to attempt to develop the data for a more comprehensive, longer term list of system preservation needs as part of the next plan update.

The streets/roadways goal, policy objectives, and recommendations/implementation strategies follow below. The recommendations are grouped by the following general categories: capacity expansion projects/studies; system preservation; TSM; and safety.

Goal: Develop and maintain a safe, effective, and efficient street and roadway system that meets the combined needs of all users for travel within and through the region, and enhances community and economic vitality.

Policy Objectives

#1 Maintain and reconstruct existing roadways and bridges in a manner that promotes safety, increases efficiency, and minimizes lifetime costs.

#2 Apply Intelligent Transportation Systems (ITS) technologies and utilize Transportation Systems Management (TSM) strategies to increase the efficiency, reliability, and safety of the roadway network, where appropriate.

#3 Address the mobility and safety needs of all users (motorists, transit users, bicyclists, pedestrians, emergency vehicles) and consider the community context when planning, designing, and constructing roadway system improvements.

#4 Provide for a continuous, interconnected roadway system (avoiding use of cul-de-sacs whenever possible) with proper spacing of arterial and collector roadways that efficiently collects and distributes traffic within and through the region, minimizing travel delays and preserving mobility of regional facilities, while also minimizing negative impacts on adjacent land uses and neighborhoods.

#5 Alleviate traffic congestion through increased roadway capacity, but only when TSM and TDM strategies have been exhausted, consistent with the goals of compact urban development and modal choice.

#6 Draw motor vehicle traffic away from local neighborhood streets and environmentally sensitive areas (traffic redirection), where possible.

#7 Manage access to the regional roadway system to preserve safety and operational efficiency.

#8 Reduce traffic crashes through a comprehensive "3-E" approach that includes education, enforcement, and implementation of cost-effective engineering counter-measures (i.e., roadway reconfiguration, new or modified traffic control devices, etc.).

#9 Provide bicycle and pedestrian accommodations along and across all streets in conjunction with street construction and reconstruction where feasible and appropriate in accordance with the U.S. Department of Transportation Policy on Integrating Bicycling and Walking into Transportation Infrastructure.

Recommendations/Implementation Strategies

Capacity Expansion Projects and Studies

#1 Continue or initiate detailed planning and construction of the arterial roadway capacity expansion, bridge, and potential future interchange projects shown in Figure 41, Major Transportation Improvements and Studies, on the next page, and listed in Table 24, Potential Arterial and Collector Street and Roadway Improvements, 2007-2030, on page 135, with consideration given to staging construction of improvements where appropriate. Table 24 shows the current projected general timing of the projects (2007-2010, 2011-2020, and 2020-2030). The timing of the projects may change due to the timing

FIGURE 41

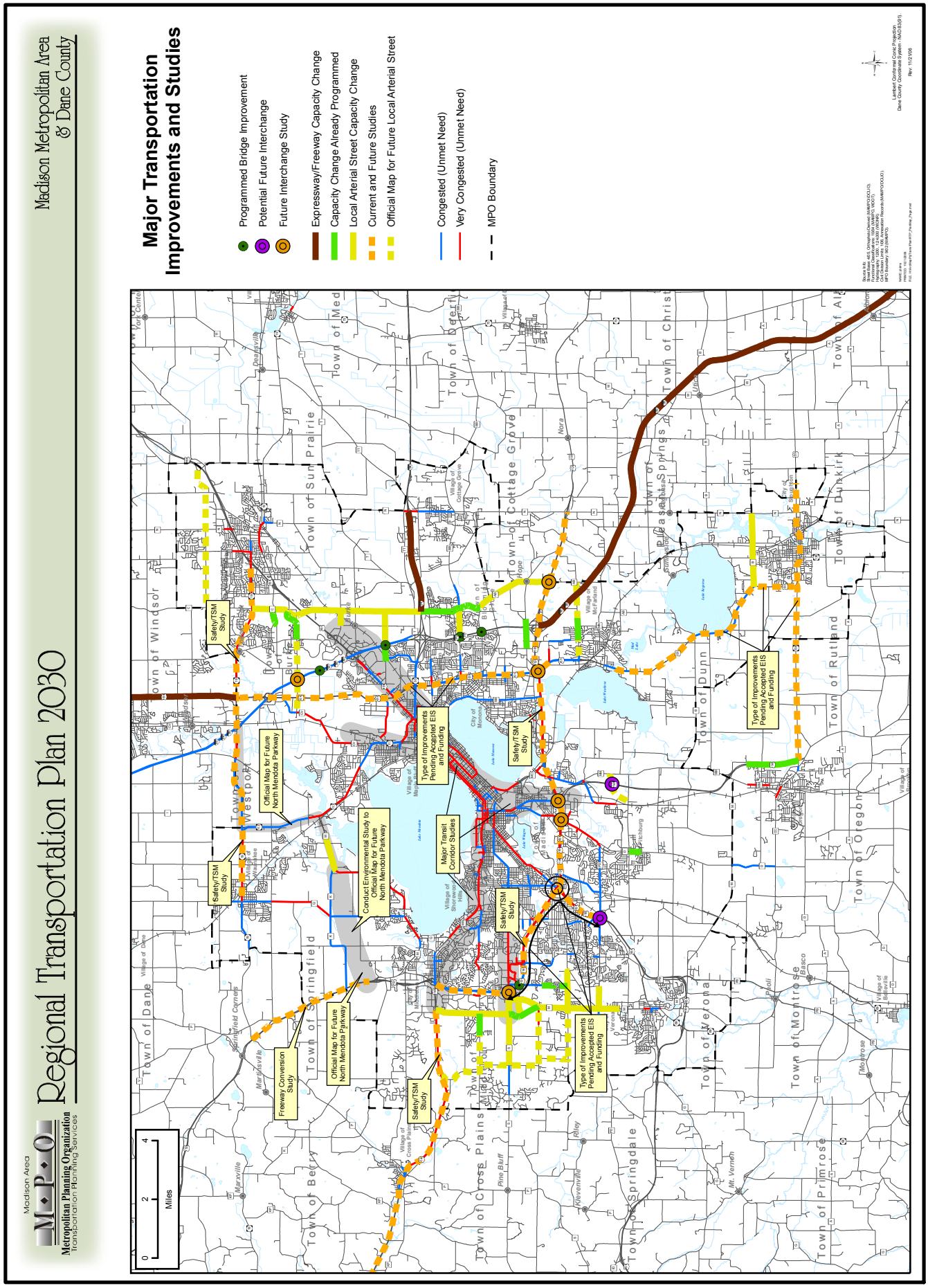

Madison Metropolitan Area & Dane County
Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services
Regional Transportation Plan 2030
Major Transportation Improvements and Studies
Programmed Bridge Improvement
Potential Future Interchange
Future Interchange Study
Expressway/Freeway Capacity Change
Capacity Change Already Programmed
Local Arterial Street Capacity Change
Current and Future Studies
Official Map for Future Local Arterial Street
Congested (Unmet Need)
Very Congested (Unmet Need)
MPO Boundary
Miles
Safety/TSM Study
Official Map for Future North Mendota Parkway
Conduct Environmental Study to Official Map for Future North Mendota Parkway
Freeway Conversion Study
Type of Improvements Pending Accepted EIS and Funding
Major Transit Corridor Studies
Town of Dane
Town of Springfield
Town of Cross Plains
Town of Berry
Town of Westport
Town of Windsor
Town of Sun Prairie
Town of Cottage Grove
Town of Pleasant Springs
Town of Dunn
Town of Verona
Town of Springdale
Town of Rutland
Town of Oregon
Town of Montrose
Town of Primrose
Town of Dunkirk

TABLE 24
POTENTIAL ARTERIAL AND COLLECTOR STREET AND ROADWAY IMPROVEMENTS 2007-2030

1. Potential Capacity Improvements & Studies Already Programmed

FACILITY	SEGMENT	ASSUMED POTENTIAL IMPROVEMENT (1)	EST. MILES	ESTIMATED TIMETABLE (2) AND PRELIMINARY COSTS (000s) 2007 TO 2010	2011 TO 2020	2021 TO 2030	COMMENTS
Roadway Segments (3)							
Femrite Dr	Marsh Rd. - I39/90	4-lane facility & bike lanes	0.6	1,960			Local Funds
Fish Hatchery Rd	Byrneland St. - Lacy Rd.	4-lane divided facility & bike lanes	0.6	2,600			Local Funds
Hoepker Rd	Rattman Rd. - Providence Plat	4-lane divided facility & bike lanes	0.5	1,580			Local Funds
High Point Rd	Mid-Town Rd to Twinflower Dr.	4-lane facility & bike lanes	0.28	920			Local Funds
	Welton Dr. - Starr Grass Dr.	4-lane facility & bike lanes	0.4	560			Local Funds
I94	I39/90 - CTH N	6-lane divided freeway	4.4	25,000			IM Funds
Lien Rd	N. Thompson Dr. - City View Dr.	4-lane divided facility & bike lanes	0.75	2,510			Local Funds
	City View Dr. - Felland Rd.	4-lane divided facility & bike lanes	0.48	1,520			Local Funds
	Felland Rd. - Reiner Rd.	4-lane divided facility & bike lanes	0.49	1,560			Local Funds
W Main St	CTH C to Plat line	4-lane divided facility & bike lanes	0.49	1,225			Local Funds
Old Sauk Rd	Prairie Smoke Rd. to Cricket Lane	4-lane facility & bike lanes	0.7	1,630			Local Funds
Pleasant View Rd Ext	Mineral Pt. Rd. - Valley View Rd.	4-lane divided facility & bike lanes	0.8	6,440			Local Funds
Siggelkow Rd	Marsh Rd – Catalina Pkwy	4-lane facility & bike lanes	0.90	2,480			Local Funds
Sprecher Rd	I94 - Buckeye Rd.	4-lane divided facility & bike lanes	2.4	5,240			Local Funds
Valley View Rd / CTH M	Intersection	4-lane expansion		1,680			STP Urban funds
		Subtotal Roadway Segments	**13.79**	**56,905**	**0**	**0**	
Bridges							
High Point Rd. Bridge	High Point Rd. & W. Beltline	4-lane bridge & bike lanes		795			NHS/Bridge Funds
I39/90/94 Bridge	Portage Rd	4-lane bridge & bike lanes		2,875			IM Funds
I39/90/94 Bridge	Lien Rd. Underpass & I90/94 Bridge	Bridge Expansion for underpass		1,395			IM Funds
		Subtotal Bridges		**5,065**	**0**	**0**	
Studies							
STH 19	C. of Sun Prairie - V. of Waunakee	Safety & TSM Corridor Study		140			State Flex Funds
USH 12	Parmenter St – STH 19	Freeway Conversion Study		100			State Flex Funds
USH 12/18/14	CTH N - USH 14 (Middleton)	Safety & TSM Corridor Study		2,500			State Flex Funds
USH 51	USH 12/18 to I90/94	Corridor Study (EIS)		1,200			State Flex Funds
USH 51	V. of McFarland - C. of Stoughton	Corridor Study (EIS)		1,000			State Flex Funds
USH 18/151/W.Beltline	Verona Rd. - W. Beltline - Min. Pt. Rd.	Corridor Study (EIS)		2,400			State Flex Funds
USH 14	C. of Middleton - V. of Mazomanie	Safety & TSM Corridor Study		600			State Flex Funds
North Mendota Pky	CTH K/CTH M - USH 12	Environmental Study		100			Local Funds
I39/90	USH 12/18 - WI/IL Border	Corridor Study (EIS)		2,300			State Flex Funds
		Subtotal Studies		**10,340**	**0**	**0**	
		Total	**13.79**	**72,310**	**0**	**0**	

(1) For cost estimating purposes only. Design and magnitude of improvement is subject to more detailed levels of planning and approval by unit of government with jurisdiction.
(2) Considering the fiscal constraints on the plan, some projects may not be funded, and all roadway projects may have their priorities and scheduling modified.
(3) Projects outside of the MPO Planning Area, not included in the financial constraint requirement are as follows:
(a) USH 14, CTH MM to STH 138, as a 4-lane divided freeway facility, 1.6 miles, $4,000, State Flex Funds (2006 to 2010 time period)
(b) River Rd, CTH V to Innovation Drive, 4-lane facility & bike lanes, 2.1 miles, $2,380, Local funds (2007 to 2010 time period)

TABLE 24
POTENTIAL ARTERIAL AND COLLECTOR STREET AND ROADWAY IMPROVEMENTS 2007-2030 (CONTINUED)

2. Potential Capacity Improvements

FACILITY	SEGMENT	ASSUMED POTENTIAL IMPROVEMENT (1)	EST. MILES	ESTIMATED TIMETABLE (2) AND PRELIMINARY COSTS (000s) 2007 TO 2010	2011 TO 2020	2021 TO 2030	COMMENTS
Roadway Segments (3)							
Cottage Grove Rd.	S. Thompson - Sprecher Rd.	4-lane divided facility & bike lanes	1.20		2,860		Local Funds
CTH N	CTH TT – Gaston Rd	4-lane facility & bike lanes	0.38		2,052		Local Funds
CTH PD (McKee Rd.)	CTH M - South High Pt. Rd.	4-lane divided facility & bike lanes	0.57		1,800		Local or STP U Funds
	South High Pt. Rd. - Maple Grove Rd.	4-lane divided facility & bike lanes	1.1		4,390		Local or STP U Funds
CTH M	Cross Country Rd. - CTH PD	4-lane divided facility & bike lanes	1.00		3,168		Local or STP U Funds
	CTH PD - Valley View Rd.	4-lane divided facility & bike lanes	2.02		6,420		Local or STP U Funds
	Valley View Rd. - Watts Rd.	4-lane divided facility & bike lanes	0.75		2,400		Local or STP U Funds
	Watts Rd. - Mineral Pt. Rd.	6-lane divided facility & bike lanes	0.34		1,260		Local or STP U Funds
CTH M	CTH K - Willow Rd	4-lane divided facility & bike lanes	1.07		3,390		Local or STP U Funds
Hoepker Rd.	USH 51 - CTH C	4-lane divided facility & bike lanes	2.94			9,300	Local or STP U Funds
Midtown Rd.	CTH M - Meadows Rd.	4-lane facility & bike lanes	1.7			4,500	Local or STP U Funds
	CTH M - Muir Field Rd.	4-lane divided facility & bike lanes	1.33			4,200	Local or STP U Funds
Mineral Pt. Rd. (CTH S)	Beltline Hwy - Junction Rd	8-lane divided facility & bike lanes	0.25		2,600		Local or STP U Funds
	Junction Rd. - Pleasant View Rd.	6-lane divided facility & bike lanes	0.51		2,700		Local or STP U Funds
	Pleasant View Rd. - Pioneer Rd.	4-lane divided facility & bike lanes	1.7		5,400		Local or STP U Funds
Nelson Rd	Felland Rd. - Reiner Rd.	4-lane divided facility & bike lanes	0.49		1,560		Local or STP U Funds
Old Sauk Rd.	Pioneer Rd. - Bear Claw Way	4-lane facility & bike lanes	1.13			2,400	Local or STP U Funds
Pioneer Rd.	Midtown Rd. - Old Sauk Rd.	4-lane facility & bike lanes	3.03			8,000	Local or STP U Funds
Pleasant View Rd.	Mineral Point Rd. - USH 14	4-lane divided facility & bike lanes	2.14		6,780		Local or STP U Funds
Reiner/Sprecher Rd.	USH 151 - CTH T	4-lane divided facility & bike lanes	3.78		12,000		Local or STP U Funds
	Buckeye Road to USH 12/18	4-lane divided facility & bike lanes	2.70			8,553	Local or STP U Funds
Valley View Rd.	CTH M - Pioneer Rd.	4-lane facility & bike lanes	2.01			5,500	Local or STP U Funds
		Subtotal Roadway Segments	**32.14**	**0**	**58,780**	**42,453**	
Interchanges							
Mineral Pt. Rd. (CTH S)	Junction Rd/CTH M intersection	Urban interchange & bike lanes			16,210		STP Urban & Local Funds
USH 14	Relocated Lacy Rd.	New Interchange		6,000			Local funds; needs access permit
USH 12/18	CTH AB	New Interchange				6,000	Funding undetermined
Verona Rd	CTH PD	New Interchange				6,000	Local Funds
I39/90/94	Hoepker Rd	Interchange Study					Funding undetermined
		Subtotal Interchanges		**6,000**	**16,210**	**12,000**	
		Total	**32.14**	**6,000**	**74,990**	**54,453**	

(1) For cost estimating purposes only. Design and magnitude of improvement is subject to more detailed levels of planning and approval by unit of government with jurisdiction.
(2) Considering the fiscal constraints on the plan, some projects may not be funded, and all roadway projects may have their priorities and scheduling modified.
(3) Projects outside of the MPO Planning Area, not included in the financial constraint requirement are as follows:
(a) USH 51, STH 19 to CTH V, 4-lane expressway, 4.3 miles, $13,000, State Flex Funds (2011 to 2020 time period)
(b) I39/90, USH 12/18 to County Line, 6-lane freeway, 20.1 miles, IM funds (2021 to 2030 time period); part of larger project to WI/IL boundary.

TABLE 24
POTENTIAL ARTERIAL AND COLLECTOR STREET AND ROADWAY IMPROVEMENTS 2007-2030 (CONTINUED)

3. Potential Arterial System Preservation Improvements Already Programmed (Projects >$1.0 mil.)

FACILITY	SEGMENT	ASSUMED POTENTIAL IMPROVEMENT (1)	EST. MILES	ESTIMATED TIMETABLE (2) AND PRELIMINARY COSTS (000s) 2007 TO 2010	2011 TO 2020	2021 TO 2030	COMMENTS
Roadway Segments (3)							
Campus Drive	Univ. Bay Dr. - 4,600 feet east	Resurface	0.87	1,660			Local funds
CTH CV	Tennyson Ln – USH 51	Reconstruction	3.30	1,550			STP Urban & Rural
CTH M	West Point Rd - Signature Drive	Rehab & bike lanes	0.74	1,000			STP Urban
Gammon Rd.	Beltline - Tree Ln.	Resurface	0.90	1,000			Local funds
W. Main St.	N. Bird St. - Clamar Dr.	Reconstruction	0.81	2,405			Local funds
Mineral Point Rd.	Beltline - Grand Canyon	Resurface	1.00	1,000			Local funds
Monona Drive	Broadway - Pflaum Rd.	Reconstruction & bike lanes	1.00	6,285			STP Urban funds
	Winnequah Dr. - Cottage Grove Rd.	Reconstruction & bike lanes	0.57	2,586			STP Urban funds
STH 19	I39/90 - USH 51	Repair/replace pavement	1.00	3,163			State Flex funds
State St.	500 & 600 Blocks	Reconstruction	0.21	5,500			Earmarks
University Ave.	Campus Dr. - Shorewood Blvd.	Resurface	0.50	1,010			Local funds
	W. Johnson St. - N. Broom St.	Repair/replace pavement	1.00	1,400			Local funds
	Allen Blvd. - Segoe	Reconstruction & bike lanes	1.58	4,920			STP Urban
USH 14	Madison - Oregon	Resurface	7.30	5,300			State Flex funds
E. Washington Ave.	Third St. - Marquette St.	Reconstruction & bike lanes	1.04	10,112			STP-U, State, Local funds
	Marquette St. - Melvin Ct. & Interch.	Reconstruction & bike lanes	0.47	16,460			STP-U, State, Local funds
		Subtotal Roadway Segments	**22.29**	**65,351**	**0**	**0**	
Bridges							
Buckeye Rd.	Interstate 39/90 & Buckeye Rd.	Bridge replacement & bike ln.		2,530			IM funds
Milwaukee St.	Interstate 39/90 & Milwaukee St.	Bridge replacement & bike ln.		1,680			IM funds
E. Washington Ave.	Third St. - Marquette St.	Bike overpass/streetscape		3,864			Earmarks, Enhancement funds
		Subtotal Bridges	**0**	**8,074**	**0**	**0**	
		Total	**22.29**	**73,425**	**0**	**0**	

(1) For cost estimating purposes only. Design and magnitude of improvement is subject to more detailed levels of planning and approval by unit of government with jurisdiction.
(2) Considering the fiscal constraints on the plan, some projects may not be funded, and all roadway projects may have their priorities and scheduling modified.
(3) Projects outside of the MPO Planning Area, not included in the financial constraint requirement are as follows:
(a) I39/90, USH 51/STH 73 to USH 12/18, Asphalt overlay, 17.97 miles, $8,022, IM funds, (2007 to 2010 time period)
(b) I94, CTH N to STH 73, Joint repair/patch and overlay, 7.47 miles, $15,345, IM funds (2007 to 2010 time period)
(c) USH 14, Cross Plains to W. County line, Mill & overlay, 10.3 miles, $4,028, NHS/SAF funds (2007 to 2010 time period)
(d) USH 18/151, STH 78 to W. County line, Patch & overlay, 4.12 miles, $6419, NHS funds (2007 to 2010 time period)
(e) STH 19, STH 78 to USH 12, Recondition, 9.6 miles, $3,107, State Flex funds, (2011-2020 time period)
(f) STH 78, CTH H to S. County Line, Reconstruction, 0.90 miles, $4,159, State Flex funds (2007 to 2010 time period)
(g) STH 92, Park St. to Hill Rd., Reconstruct & structures, 1.1 miles, $5,566, State Flex funds (2011 to 2020 time period)
(h) CTH ID, STH 78 to W. County line, Resurface, 4.21 miles, $1,100, Ru & local funds (2007 to 2010 time period)
(I) CTH S, CTH P to Pine Bluff, Resurface, 2.1 miles, $1500, RU & local funds (2007 to 2010 time period)
(j) Vinburn Rd., CTH CV to USH 51, Reconstruct, $1,650, Local funds (2007 to 2010 time period)

TABLE 24
POTENTIAL ARTERIAL AND COLLECTOR STREET AND ROADWAY IMPROVEMENTS 2007-2030 (CONTINUED)

4. Potential Arterial System Preservation Improvements (Projects >$1.0 mil.)

FACILITY	SEGMENT	ASSUMED POTENTIAL IMPROVEMENT (1)	EST. MILES	ESTIMATED TIMETABLE (2) AND PRELIMINARY COSTS (000s) 2007 TO 2010	2011 TO 2020	2021 TO 2030	COMMENTS
Roadway Segments							
E. Johnson St.	Butler St. - Baldwin St.	Reconstruction	1.04		5,850		Local or STP U funds
Monona Dr	Pflaum - Winnequah	Reconstruction	0.94		1,800		Local or STP U funds
Old Middleton Rd.	Capital Ave. - Countryside Ln.	Reconstruction	0.70		1,610		Local funds
STH 19	Klein Dr. – Division St.	Reconstruction	0.75		2,014		State Flex funds
STH 113	E. Johnson - Debs Rd.	Resurface/Repair	4.50		10,000		State & Local funds
N. Thompson Dr.	Lien Rd/Zeier Rd. Intersection	Reconstruction			1,530		Local funds
E. Washington Ave.	Thierer Rd. – East Springs Dr.	Reconstruction & bike lanes	0.80		9,940		Local funds
		Total	**8.73**	**0**	**32,744**	**0**	

(1) For cost estimating purposes only. Design and magnitude of improvement is subject to more detailed levels of planning and approval by unit of government with jurisdiction.
(2) Considering the fiscal constraints on the plan, some projects may not be funded, and all roadway projects may have their priorities and scheduling modified.

5. Illustrative Capacity Improvement Projects (No identified funding)

FACILITY	SEGMENT	ASSUMED POTENTIAL IMPROVEMENT (1)	EST. MILES	ESTIMATED TIMETABLE (2) AND PRELIMINARY COSTS (000s) 2007 TO 2010	2011 TO 2020	2021 TO 2030	COMMENTS
Roadway Segments							
Anderson St	International Ln to Wright St	4-lane facility & bike lanes	1.14			3,000	
CTH CV	Tennyson Ln – USH 51	4-lane facility & bike lanes	3.30			8,712	
CTH N	Gaston Rd – Cottage Grove Rd	4-lane facility & bike lanes	1.24			3,273	
CTH Q	Century Ave – Balzar Rd	4-lane facility & bike lanes	1.50			4,600	
	Balzar Rd – Village of Waunakee	4-lane divided facility & bike lanes	3.18			10,074	
North Mendota Pkwy	CTH K / CTH M / STH 113 / STH 19	4-lane divided expressway	12.03			28,000	Official map corridor; candidate
		(45-55mph speed facility)					EIS study in later time periods
		Total	**22.39**	**0**	**0**	**57,659**	

(1) For cost estimating purposes only. Design and magnitude of improvement is subject to more detailed levels of planning and approval by unit of government with jurisdiction.
(2) Considering the fiscal constraints on the plan, some projects may not be funded, and all roadway projects may have their priorities and scheduling modified.

and location of future land use development, the impacts of congestion management system (CMS) strategies (which are implemented prior to addition of general purpose travel lanes), safety analyses, future pavement conditions, available funding, and other factors. [WisDOT, Dane County, local governments]

#2 Consider potential Beltline (USH 12/14/18/151) and Interstate interchange design changes to improve capacity and/or safety as part of ongoing and planned studies, including the Beltline interchanges at Mineral Point Road, Verona Road, Fish Hatchery Road, Park Street/USH 14, and Stoughton Road (USH 51) and the Interstate 39/90 interchanges at STH 19 and USH 12/18. [WisDOT]

#3 Complete the Alternatives Analysis Studies and Environmental Impact Statements (EISs) for the central and southern segments of USH 51 (Interstate to Terminal Drive south of the Beltline and McFarland to Stoughton) that are looking at long-term solutions to the congestion, safety, and multi-modal access issues in the corridor. Upon completion of accepted Final EISs, begin planning to advance recommended improvements with the timing dependent upon ongoing needs assessment and available funding. Also, continue to implement short-term TSM, safety, and pedestrian/bicycle improvements in the corridor. [WisDOT, City of Madison]

Currently planned short-term TSM and safety improvements in the central segment of the USH 51 corridor include:

- Improvements to the signal timing along the roadway;
- Extension of Bartillon Drive connecting Portage Road to USH 51 via Kinsman Boulevard;
- Addition of a southbound transition lane between Buckeye Road and Cottage Grove Road;
- Improvements to address safety concerns at the Hoepker Road intersection; and
- Increasing the capacity of the ramps and approaches at the USH 51 and Beltline interchange.

#4 Complete the Final EIS for the Verona Road/West Beltline Study looking at long-term solutions to the congestion, safety, and multi-modal access issues in the corridor. Upon completion of an accepted Final EIS, begin planning to advance recommended improvements with the timing dependent upon ongoing needs assessment and available funding. Continue to pursue and implement interim or short-term TSM, safety, and pedestrian/bicycle improvements in the corridor. Also continue to pursue extending Raymond Road access to the Allied Drive neighborhood and adding additional grade-separated crossings of the Beltline to relieve congestion from the interchanges. [WisDOT, City of Madison]

#5 Complete the recently initiated Safety/TSM Study in the STH 19/STH 113 corridor between Sun Prairie and Waunakee. Advance short-term improvement recommendations that come out of the study, while taking into consideration and continuing to plan for potential future capacity expansion of the roadway. [WisDOT, local governments in corridor]

#6 Conduct a Freeway Conversion Study for USH 12 from Parmenter Street in the City of Middleton north to STH 19. Upon completion, begin planning to advance interchanges and other recommendations generated from the study. [WisDOT]

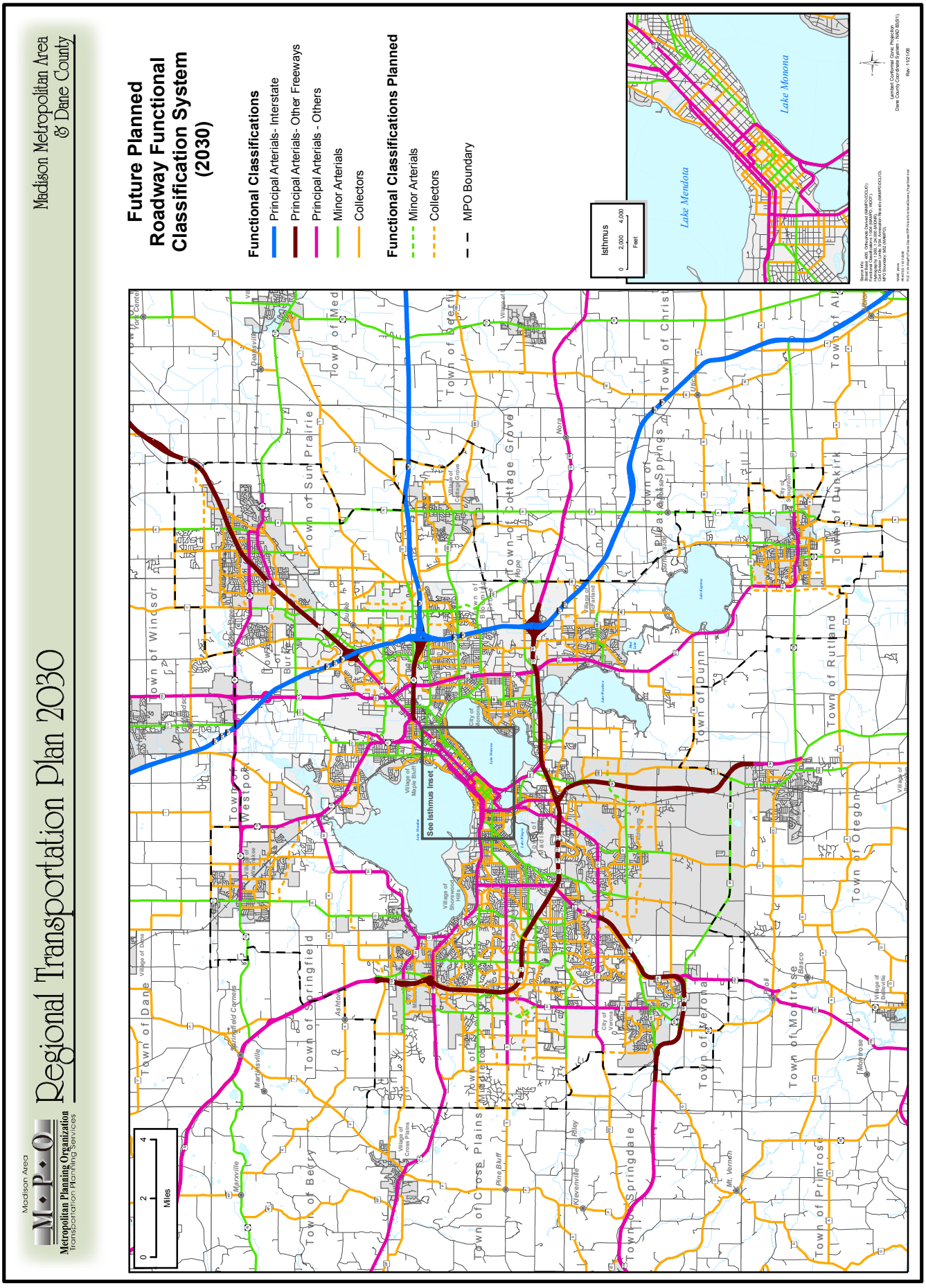
#7 Conduct a Safety/TSM Study in the USH 14 corridor between the City of Middleton and the Village of Cross Plains. Advance short-term TSM and safety improvement recommendations that come out of the study. [WisDOT, local governments in corridor]

#8 Conduct a needs assessment of a potential new interchange on USH 12/18 at CTH AB. [WisDOT]

#9 Conduct a needs assessment of a potential new interchange on Interstate 39/90 at Hoepker Road. [City of Madison]

#10 Continue to plan for and utilize official mapping, right-of-way dedications, and other programs to preserve existing and planned future arterial and collector roadway corridors for potential improvements such as Pioneer/Meadow Road (USH 14 to Mid-Town), Mid-Town Road (CTH M to Meadow), Old Sauk Road (west to Pioneer Rd.), Valley View Road (CTH M to Pioneer), Hoepker Road (CTH C to CTH CV), and Siggelkow Road (USH 51 to CTH AB). See Figure 41, Major Transportation Improvements and Studies on page 134. Also, see Figure 42, Future Planned Roadway Functional Classification System, on the next page, which includes planned new collector roadways. [Dane County, local governments]

FIGURE 42


Madison Area
M • P • O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area
& Dane County
Future Planned
Roadway Functional
Classification System
(2030)
Functional Classifications
Principal Arterials- Interstate
Principal Arterials- Other Freeways
Principal Arterials - Others
Minor Arterials
Collectors
Functional Classifications Planned
Minor Arterials
Collectors
MPO Boundary
See Isthmus Inset
Isthmus
Lake Mendota
Lake Monona
0 2 4 Miles
0 2,000 4,000 Feet

#11 Continue or initiate detailed planning and construction of collector street connections and extensions that help complete the "grid" street network, thereby efficiently distributing traffic on the regional system. [Local governments, WisDOT]

Examples of currently planned or proposed such connections include the following:

- New crossing of Interstate 94 between Sprecher Road and Gaston Road;
- Milwaukee Street extension to Gaston Road;
- Extension of Eastpark Blvd. in the American Center to Portage Road;
- Extension of Thompson Road across USH 151 to O'Keefe Avenue in Sun Prairie;
- Extension of West Main Street in Sun Prairie from CTH C to Rattman Road;
- Extension of Watts Road across the Beltline to Odana Road at Research Park Blvd.;
- New street across Beltline west of Gammon Road interchange connecting West Towne Mall and Watts Rd.;
- Extension of S. High Point Road from Mid-Town Rd. to Raymond Rd., connecting to the southern segment of street;
- Extension of Fitchrona Road from Nesbitt to McKee Road (CTH PD);
- Extension of Post Road from Fish Hatchery Road to existing Post Road;
- Mid-Town Road realignment to connect directly to Raymond Road; and
- Extension of Elderberry Road from existing terminus to Pleasant View Road.

#12 Work with the City of Verona to identify the potential for future official mapping of a north-south roadway west of the City from USH 18/151 north to CTH PD and possibly to Mid-Town Road as part of the future arterial/collector roadway system on the West side of the metro area. [City of Verona, Madison Area MPO]

#13 Work with the City of Sun Prairie to conduct a study of the Egre Road corridor as a potential long-term future arterial roadway. [City of Sun Prairie, Madison Area MPO]

System Preservation

#14 Continue to implement pavement management programs to assist in making cost-effective decisions concerning the maintenance and rehabilitation of roadways in a systematic way. It is also recommended that Dane County and local governments prepare annual street condition reports similar to the report prepared by the City of Madison that provide information on the pavement condition of roadways and maintenance and reconstruction work. [WisDOT, Dane County, local governments]

#15 Continue enforcement of truck weight regulations to reduce premature deterioration of roadways and bridges. [WisDOT]

Enforcement activities are conducted at State Patrol safety and weight inspection facilities as well as through mobile enforcement using portable scales.

Transportation System Management (TSM)

#16 Continue to implement access management standards and plans for existing and future arterial roadways as development and street reconstruction (curb replacement) occur. [Local governments]

Access management plans include consideration of: (a) combining driveways, moving them away from intersections, or aligning them with other driveways or streets; (b) addition of a median or other median treatments such as pedestrian refugee areas at intersections; and (c) providing for protected left-turn movements. Access management plans for existing roadways would in many cases need to be implemented incrementally over time as (re)development occurs.

#17 Continue to monitor congestion and crash data for arterial and collector roadway intersections, and implement intersection improvements (e.g., adding turn lanes, signalization, etc.) to address major problem areas, where feasible. [Local governments]

#18 Consider restricting curb-lane parking during peak traffic periods on arterial roadways, where appropriate, as a means to improve traffic flow and local bus service without expanding roadway capacity. [Local governments]

#19 Continue to expand and improve current traffic signal coordination efforts. Implement a coordinated system for those arterials that currently don't have coordinated signals. [City of Madison Traffic Engineering and other local public works departments, WisDOT]

#20 Continue to monitor improvements in technology (e.g., video cameras for traffic detection, traffic responsive signal systems) and implement where cost effective. [City of Madison Traffic Engineering, other local public works departments, WisDOT]

#21 Expand use of ramp meters (with HOV bypass) to other locations on the Beltline and other locations where appropriate and cost effective. [WisDOT]

#22 Expand the current incident management program to include additional roadways (e.g., USH 12, Verona Road/USH 18/151), additional coverage of service patrols to peak non-work related travel periods, and additional strategies (e.g., motorist information systems). [WisDOT]

#23 Establish an inter-agency Intelligent Transportation Systems (ITS) staff work group/committee with the following purposes and responsibilities:

- Provide a forum for continued dialogue and coordination on all ITS related issues;
- Monitor and provide input to the ITS project conformity process;
- Coordinate the development of procedures or agreements in support of ITS activities;
- Oversee the maintenance and updating of the regional ITS architecture plan and priority list of projects;
- Monitor ITS standards development and identify approaches to regional application of standards;
- Coordinate specific regional ITS projects and the interface between local projects and regional ITS systems;
- Monitor and evaluate evolving technologies for potential implementation;
- Coordinate the collection, sharing, and use of ITS-generated data (e.g., from traffic sensors); and
- Facilitate liason with ITS activities in other areas (e.g., Southeast Wisconsin).

  [Madison Area MPO, WisDOT]

#24 More fully incorporate ITS applications into future roadway corridor studies, where appropriate. [WisDOT]

#25 Encourage integration of ITS infrastructure into preliminary engineering and design of major reconstruction projects on arterial roadways. [WisDOT, Dane County, local governments]

#26 Continue to improve the area-wide communication network for sharing information among state, county, and local agencies and making such information available to the general public on planned and unplanned road/lane closures, detour and alternative route information, construction zones, major traffic crashes and other incidents, special events, etc. [WisDOT, Dane County, local governments]

#27 Explore the implementation of a 311 telephone system to report non-emergency incidents such as vehicle breakdowns, debris in the roadway, and traffic signal problems, as well as other non-transportation related issues. [WisDOT, Dane County, local governments]

Besides the 911 emergency number, America's telephone companies and the Federal Communication Commission (FCC) have adopted other three-digit number, including 311. The 311 number was approved for nationwide use by the FCC in 1997. While implementation has been relatively slow, there are now numerous cities around the country that have implemented the system. Calls to 311 can either be routed to a separate center staffed by non-public safety personnel or to the same center where 911 and other public safety calls are handled. In either case, the information is entered into a computer and routed to the proper city/county agency for handling.

#28 Update Isthmus Traffic Redirection Study. [Madison Traffic Engineering, Madison Area MPO]

#29 Continue to improve the area wide traffic count program (e.g., adding turning movement counts at high volume intersections/interchanges) to assist with the regional congestion management system process. [WisDOT, City of Madison Traffic Engineering, Madison Area MPO]

Safety

#30 Continue to improve on state and local efforts to identify high crash locations, conduct more detailed study of these areas, and implement remedial design improvements as part of the ongoing transportation planning and programming process. [WisDOT, Dane County, local governments, Madison Area MPO]

There is a need for improved quantitative analysis for prioritizing safety needs and determining the benefits of safety improvements. There is a new focus on looking at crashes for different types of facilities versus use of crash rates. Improving the design and operation of intersections is one of the high priority issue areas of WisDOT's 2006-2008 Wisconsin Strategic Highway Safety Plan (see recommendation #30).

#31 Improve the statewide Safety Information Management System, particularly in regards to developing better location-specific crash data and improving access to and dissemination of this data. [WisDOT]

This is also one of the highest priority issue areas of 2006-2008 Wisconsin Strategic Highway Safety Plan (see recommendation #30).

#32 Continue to implement cost-effective changes to traffic signals and signs that are found to reduce crashes (e.g., use of brighter, light emitting diode (LED) lighting, de-activation of unwarranted existing signals, overhead lighted street signs on arterials, etc.). [Local public works/traffic engineering agencies]

#33 Support efforts of the Wisconsin Department of Transportation (WisDOT) to implement the 2006-2008 Wisconsin Strategic Highway Safety Plan and future updates to the plan. [WisDOT, Dane County, local governments, state agencies, law enforcement agencies, private organizations, others]

The 2006-2008 Wisconsin Strategic Highway Safety Plan was prepared by WisDOT's Traffic Safety Council, a multi-disciplinary team that works with a wide range of safety professionals and advocates. Such plans are required by SAFETEA-LU. The 2006 plan is the second strategic highway plan prepared. One of the primary functions of the plan is to coordinate statewide goals and safety programs, helping WisDOT's safety partners (federal, state and local planners/engineers, law enforcement agencies, MPOs, health care organizations, non-profit organizations, UW-Madison, media) better leverage limited resources and work together. The plan prioritizes 26 identified issue areas based upon the issue's importance relative to the number of traffic crashes, injuries, and deaths and the ability of WisDOT and its safety partners to influence the issue. The top ten issue areas identified are:

- Increase safety belt use/air bag effectiveness.
- Improve the design/operation of intersections.
- Improve the safety data/decision support system.
- Reduce speed-related crashes.
- Reduce impaired driving.
- Minimize the consequences of leaving the roadway.
- Design safer work zones.
- Reduce head-on and cross-median crashes.
- Keep vehicles on the roadway.
- Increase driver safety awareness.

Other issue areas include: sustaining proficiency in older drivers; curbing aggressive driving, improving traffic incident management, making truck travel safer, making walking and bicycling safer, and reducing deer crashes.

#34 Expand membership and activities of the Dane County Traffic Safety Commission. [Dane County Highway & Transportation Dept.]

#35 Study and implement cost-effective measures to reduce motor vehicle/deer crashes in the county (e.g., deer fences). [WisDOT, Dane County, local governments]

A state study on this issue is in progress. Dane County has had the most such crashes statewide (1,007 in 2004).

#36 Continue to expand safety education efforts, including neighborhood-based initiatives. [WisDOT, local governments, non-profit organizations]

#37 Continue to support and expand traffic enforcement activities, including using local traffic teams such as the City of Madison's TEST unit and Dane County Sheriff's Office Traffic Team and undertaking special enforcement initiatives such as the one targeting aggressive driving on the Beltline using helicopters by the Beltline Task Force. [Dane County and local law enforcement agencies]

Other
#38 Work with WisDOT, Dane County, and local governments to review potential jurisdictional transfers of roadways, where appropriate.

Public Transit

Metro Transit provides a much higher level of service and has much higher ridership than similarly sized urban areas around the country. Metro provides 2.5 times more hours of service and has four times as many riders per capita than other areas with a similar population. Weekday peak-period service frequencies are generally less than five minutes to 10 minutes in the greater Isthmus area where routes converge in the arterial corridors leading to the downtown/UW campus area. Beyond this core area, peak service frequencies are 15-30 minutes. Off-peak frequencies are generally 10-15 minutes (5-7 minutes between the UW campus and downtown) in the core area and 30-60 minutes elsewhwere. The weekday span of service for most areas with all-day service is excellent with routes running 17-19 hours a day.

A major weakness of the system is the lack of express service. Travel times from suburban communities and peripheral Madison neighborhoods to the downtown/UW campus area are long relative to driving. Other needs include: (a) improved service to some peripheral employment centers; (b) downtown/UW campus commuter service from suburban communities such as Sun Prairie, Oregon, and Stoughton; and (c) new or improved off-peak and weekend service to some areas (e.g., south side) and communities (e.g., Middleton, Monona). Express service and other improvements to the system are unlikely to be implemented without a new dedicated funding source for transit and a new governance structure that regionalizes the system.

This plan continues a Madison Metropolitan Area transit expansion emphasis, and carries forward the recommendation from the previous plan to establish high capacity, fixed-guideway transit service in the identified East-West Transit Corridor. The details of such a system, including the technology to be used and the routing of an initial start-up system, are being addressed in the currently ongoing Transport 2020 Study. This study, which is in the final preliminary engineering/EIS phase, will also be making recommendations for a new finance/governance structure for the transit system.

As part of development of the plan, the ridership and traffic impacts of implementation of an aggressive expansion and improvement of the transit system were analyzed using the MPO's travel simulation model. The transit improvements modeled included a "hybrid" rail system (which allows running on-street as well as in the rail corridor) with two segments on each end connecting Greenway Center and the new UW Research Park on the west side with the airport and Sun Prairie on the east side. They also included new express bus service from outlying communities running through the bus transfer points as well as local bus service extensions and improvements. Figure 40 on page 131 shows the hybrid rail and express bus system that was modeled. The modeling showed that transit ridership could be expected to increase 30-40% by 2030 with these improvements. Additional refinements to the transit model are being made as part of the Transport 2020 Study. In addition, changes to the existing bus system are being planned to better integrate it with the fixed guideway system—something that wasn't done as part of this planning process. Thus, the potential increase in transit ridership could perhaps be even higher.

The public transit goal, policy objectives, and recommendations/implementation strategies to achieve these objectives follow below.

Goal: Develop and maintain a safe, effective, and efficient transit system that provides a viable transportation alternative to the auto for trips within and between urban areas.

Policy Objectives

#1 Maintain and operate transit facilities and service as safely and efficiently as possible.

#2 Improve transit service and facilities to increase the system's accessibility, attractiveness, and competitiveness with the auto in a manner to achieve an increasing proportion of total transit trips, particularly in congested or constrained corridors serving the central Madison area and other major employment/activity centers.

#3 Increase accessibility to employment opportunities and medical and other services for persons having less or no access to automobiles and those with disabilities.

#4 Focus transit service improvements and extensions in existing, redeveloping, and developing urban areas with supportive land use patterns and population and employment characteristics.

#5 Develop commuter transit and/or expand vanpool services to the central Madison area and to other major employment/activity centers from outlying cities and villages.

#6 Expand the Park-and-Ride system within the Madison area and outlying cities and villages.

Recommendations/Implementation Strategies

#1 Work to reach regional agreement on and implement the service improvement and finance/governance recommendations from the current final phase (PE/EIS) of the Transport 2020 (East-West Transit Corridor) Study. [Transport 2020 Implementation Task Force, City of Madison and other local governments, Dane County, WisDOT, Madison Area MPO]

The Transport 2020 Study is looking at the establishment of high capacity, fixed-guideway transit service with complementary express bus and connecting local service in a general East-West Transit Corridor extending from the greater East Towne area and the airport on the East and North sides to the greater West Towne area and the City of Middleton's Greenway Center on the West side. Express bus service from outlying communities and peripheral Madison neighborhoods and connecting local service is envisioned to complement the fixed guideway system, which might be extended in the future (e.g., to Sun Prairie). Federal funding, which is necessary for the project to proceed, will be sought through the Federal Transit Administration's (FTA) New Starts process.

The Transport 2020 Study will also be making recommendations regarding a finance and governance structure for the enhanced regional transit system. Among the alternatives being studied by the study's Finance/Governance Sub-Committee is the creation of a countywide Regional Transit Authority (RTA) funded through a sales tax. There are still many issues that need to be worked out, however. Most people would agree that creation of some form of an RTA will be necessary at some point in order to develop a regional transit system. The current structure of a city-owned transit system that contracts with other jurisdictions for service makes service planning difficult and leads to route inefficiencies.

Figure 40, on page 131, shows one of the fixed-guideway transit alternatives being considered as part of the Transport 2020 Study—a hybrid rail technology that allows running on-street as well as in the rail line. The rail system would be complemented by express bus service from outlying communities and peripheral Madison area neighborhoods. The system shown in Figure 40 is a long-term vision, and shows how the system connects the urban areas and employment/activity centers. The Transport 2020 Study is looking at a starter system that would include only part of the fixed-guideway transit system and some of the express bus routes shown.

#2 Complete the current Streetcar Study, and advance to the next phase of planning if found to be feasible. Consider moving forward with short-term improvements in downtown/UW campus circulator service for residents, students, employees, and visitors using some type of bus (e.g., smaller 30-foot, hybrid-electric, trolley bus). Also explore the potential for circulator service (possibly using a trolley bus) between downtown Middleton and Greenway Center.

#3 Continue efforts to improve and expand local bus service through service extensions, increased frequency of service, improved bus phasing, reduced travel time, enhanced transfer opportunities, route schedule changes/simplification, and improved on-time performance. [Metro Transit]

#4 Add "express" or "limited stop" bus services to the extent feasible from peripheral neighborhoods and outlying communities. [Metro Transit]

Metro Transit staff have had service planning discussions with a number of communities that have shown interest in implementing commuter-oriented service, including the Cities of Sun Prairie and Stoughton and the Villages of Oregon and Cross Plains. Surveys conducted show significant ridership potential.

#5 Continue efforts to implement traffic management strategies and other actions (exclusive bus lanes, transit signal priority, bus queue jumpers), where appropriate and practical, that give priority to transit. [Local governments, Metro Transit]

Metro Transit and City of Madison Traffic Engineering staff have begun to explore potential applications of traffic signal prioritization. Opportunities to expand the existing network of bus lanes should be considered and planned where feasible and practicable. Examples of arterial streets where bus lanes should be considered in the future include: Johnson Street (Randall St. to Bassett St.); Campus Drive; Whitney Way (University Ave. to Mineral Point Rd.); and Cottage Grove Road (if the transit system is restructured to a more east-west orientation in the future). Extensions of the Fish Hatchery Road and Mineral Point Road bus lanes should also be planned.

#6 Continue efforts to improve the amenities at bus stops (pads, benches, shelters, shelter heating at transfer points and other major stops, schedule information, etc.), utilizing boarding/alighting, land use, demographic, and other data to prioritize bus stop improvements. [Metro Transit]

Metro continues to work with the City of Madison and other communities on expanding the number of bus stops with boarding pads, benches, and shelters through the sidewalk replacement program, incorporating requirements in development plans, and working with land owners. Metro is pursuing a bus shelter advertising program to provide new, attractive back-lit shelters. Metro is also considering a pilot program to test the addition of heating elements in shelters at some transfer points.

#7 Continue efforts to improve pedestrian and bicyclist access to the transit system, including putting bicycle racks on all buses.

#8 Continue efforts to improve safety and security of bus riders and drivers on buses and at the transfer points and other major bus boarding locations. [Metro Transit]

Metro recently developed a new safety/security plan and has placed surveillance cameras on some buses and at the South and West Transfer Points. Additional training is being provided to bus supervisors and operators in maintaining a safe environment and dealing with altercations.

#9 Continue efforts to improve the effectiveness of the ITS system and to implement additional ITS applications, including making real-time traveler information available via the Internet and telephone and adding displays at major stops. [Metro Transit]

It is anticipated that real-time schedule information will be available on Metro's Web site starting in late fall of 2006 or early 2007.

#10 Continue to explore additional short-term funding options (e.g., advertising at bus stops, application of Medicaid funding for fixed route service trips by eligible persons), support increased state funding, and pursue a longer term dedicated funding source to support regional transit system improvements. [Metro Transit, Transport 2020 Implementation Task Force]

Continued efforts of Metro to explore all possible funding options as well as the continued commitment of the State to be a strong partner in the funding of public transit are essential to making further improvements in and expanding the Metro transit system. The percent of Metro operating expenses covered by the State has dropped from 45% in 1996 to 37% in

2005. The 2003-2005 State budget provided no funding increase for public transit statewide and the 2005-2007 budget only provides a 2% annual increase. Higher percentage increases will be needed in the future.

Implementation of major transit service improvements, such as the rail and express commuter bus service proposals being evaluated as part of the Transport 2020 Study, are dependent upon attaining a dedicated source of local funding for public transit. Around 25% of Metro's 2005 budget came from local funding largely provided by property taxes. Metro must compete annually for limited property tax dollars with mandated services and projects. Metro has barely been able to secure enough funding to offset shortages in State and Federal funding, let alone fund any service improvements or expansion. Service improvements over the last six years have come through reallocation of service hours versus an increase in service levels. Most public transit systems nationwide have dedicated local funding, typically a sales tax. A sales tax provides funding that increases with inflation and area growth, providing a stable funding source.

#11 Continue to update the map of potential future bus routings and promote transit-supportive land use and site designs in these corridors. [Metro Transit, City of Madison and other local governments]

Paratransit/Specialized Transportation

Paratransit refers to demand responsive transit service provided on an advance reservation basis for persons unable to use the regular fixed-route service. The Americans with Disabilities Act (ADA) requires such service to be provided within three-quarters of a mile of all regular bus routes and sets out other requirements for the service. Metro Transit meets and in some cases exceeds these ADA requirements. Specialized transportation refers to other group ride and demand-responsive services provided for the elderly and persons with disabilities. These services supplement Metro service, generally transporting persons to support and medical services, jobs, and training.

Goal: Provide high-quality ADA paratransit service for persons unable to utilize accessible fixed-route bus service and supplementary specialized transportation services (particularly outside the Metro service area) that provide basic mobility and allow persons to access essential services.

Policy Objectives

#1 Improve the efficiency and coordination of paratransit and specialized transportation services for the elderly and persons with disabilities and expand the services available to these groups.

#2 Coordinate specialized transportation services with shared-ride taxi service and other private transportation services.

Recommendations/Implementation Strategies

#1 Continue efforts to improve the efficiency and on-time performance of Metro paratransit service through use of Metro's new automatic vehicle locator (AVL) system, information provided by contractors, use of incentives, and other means. Continue to provide paratransit service that meets and preferably exceeds ADA requirements to the extent feasible. [Metro Transit]

Metro's strategic plan for improving the efficiency of paratransit includes: (a) reducing overall service costs by attracting more providers to the provision of service, thereby increasing competitive pricing; (b) expanding the number of templates for paratransit subscription services to increase efficiency and consistency in service; and (c) improving the monitoring of on-time compliance. Metro has implemented a pilot program called Long-Term Assignment, which allows Metro to assign individual clients with recurring or standing trip requests to a contractor that is directly responsible for receiving, coordinating, scheduling, performing, and reporting their trip requests. The program provides both the incentive and opportunity to increase efficiency in scheduling trips by "templating" a substantial number of clients and allowing negotiation of pick up times. Another Metro initiative is to contract for in-person functional assessment to be done for paratransit service applicants.

#2 Continue efforts to increase funding and improve county specialized transportation services (particularly outside the Metro transit service area), and to coordinate such services and Metro paratransit service. [Dane County Human Services]

#3 Work to expand the RSVP program through recruiting of additional volunteers, increasing reimbursement rates, and better publicizing the program. [Dane County Human Services, private organizations/aging network, MPOs]

#4 Explore possible creation of a "mobility management center" for the coordination of transportation for persons with transit needs (taxis, vans, etc.), particularly those that have non-traditional hours and locations, such as rural areas. [Madison Area MPO, Metro Transit, Dane County Human Services, private taxi companies, non-profit organizations]

#5 Explore creation of a countywide specialized transportation coordinating council to assist in the planning and coordination of publicly and privately provided specialized transportation services. [Dane County Human Services, Madison Area MPO]

#6 Continue efforts to reduce duplication of paratransit and specialized transportations services provided by Metro, Dane County, and private agencies. [Dane County Human Services, Metro Transit, Madison Area MPO, private organizations]

#7 Continue efforts to increase the accessibility of private taxicab service for persons with a disability. [Madison Traffic Engineering, Madison Area MPO, others]

#8 Develop a process for regional licensing of private taxi cab operators. [Dane County, RTA (if created), others]

TDM/Ridesharing

Travel demand management (TDM) refers to strategies that seek to shift travel to higher occupancy (transit, car/vanpool) or non-motorized (bicycle, walking) transportation modes, shift travel to less congested times of the day, and/or reduce or eliminate the need to travel (e.g., through telecommuting). Current TDM programs and activities were described in Part 1 of the plan (see page 99). This plan recommends expansion of the current activities and programs, including the Madison Area MPO's employer-based program. Employer based programs are generally the most effective in reducing work trips, and work trips are the easiest to shift to alternative transportation modes. TDM strategies can be chosen to meet the specific needs of the employees based upon the worksite characteristics and the employees' demographic and travel characteristics. In addition, a corporate "culture" can be created that reinforces the TDM message. TDM goals and specific recommendations/implementation strategies are described below.

Goals:

#1 Make the most efficient use of the existing transportation system through TDM strategies.

#2 Encourage ridesharing, particularly for trips to work and school, and for trips not conveniently served by the public transit system.

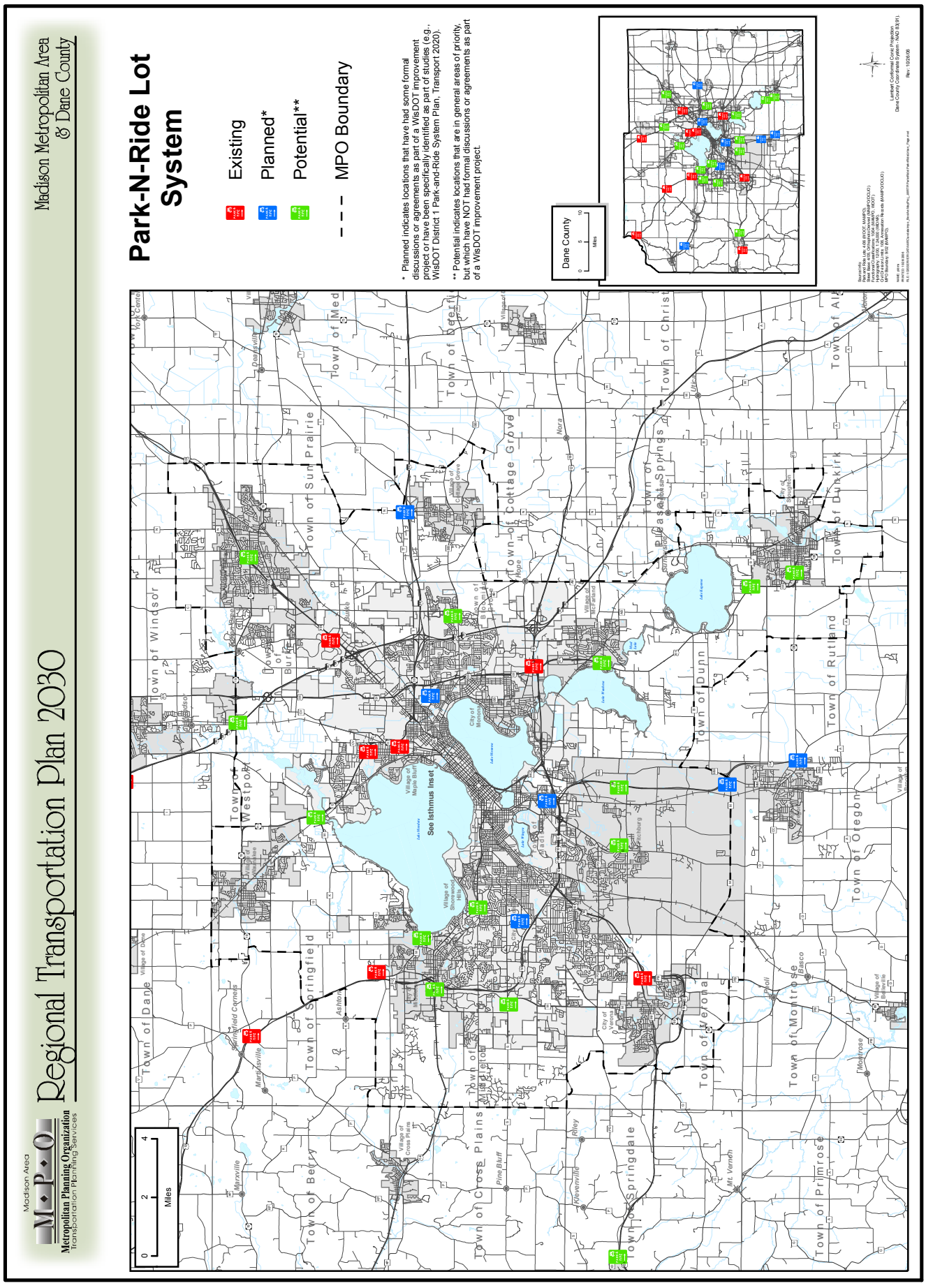
Recommendations/Implementation Strategies

#1 Continue to expand the countywide park-and-ride (PnR) system to encourage carpooling and transit use. See Figure 43, on the next page, which shows the existing, planned, and other potential future park-and-ride lots supporting the transit system and ridesharing programs. [WisDOT, Metro Transit, Dane County, local governments]

PnR lots provide convenient locations for car- and vanpoolers to meet. They also can provide access to the transit system for persons who cannot conveniently access the bus system on foot. Common reasons for using PnR lots are that there is no bus service or convenient service near a person's home or a car is needed before or after the bus trip (e.g., to drop a child off at daycare). Most PnR lot users are commuters who work or go to school in the downtown/UW campus area where parking is expensive and/or in short supply. Increased use of the PnR system will help reduce traffic congestion and parking demand in the downtown area and other intensely developed areas.

#2 Continue to expand the scope of the Madison Area MPO's Rideshare Etc. program (e.g., provide assistance to more employers or groups of employers on TDM plans, work with local communities on TDM ordinances, hold promotional and PR events, possibly add a School Pool Program). [Madison Area MPO, local governments]

FIGURE 43


Madison Area
M • P • O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area
& Dane County
Park-N-Ride Lot System
Existing
Planned*
Potential**
MPO Boundary
* Planned indicates locations that have had some formal discussions or agreements as part of a WisDOT improvement project or have been specifically identified as part of studies (e.g., WisDOT District 1 Park-and-Ride System Plan, Transport 2020).
** Potential indicates locations that are in general areas of priority, but which have NOT had formal discussions or agreements as part of a WisDOT improvement project.
Dane County
0 5 10 Miles
0 2 4 Miles
See Isthmus Inset
Town of Dane
Town of Springfield
Town of Windsor
Town of Sun Prairie
Town of Cottage Grove
Town of Christiana
Town of Dunkirk
Town of Rutland
Town of Dunn
Town of Oregon
Town of Verona
Town of Montrose
Town of Primrose
Town of Springdale
Town of Cross Plains
Town of Berry
Town of Westport
Town of Blooming Grove
Town of Burke
Town of Medina
Town of Deerfield
Town of Albion
Town of Pleasant Springs
Village of Cross Plains
Village of Maple Bluff
Village of Shorewood Hills
Village of Mount Horeb
Village of Oregon
Village of Belleville
Village of Black Earth
Village of Blue Mounds
Village of Brooklyn
Village of Cottage Grove
Village of Cottage Grove
Village of Deerfield
Village of Dane
Village of DeForest
Village of McFarland
Village of Mazomanie
Village of Middleton
Village of Monona
Village of Rockdale
Village of Waunakee
Village of Windsor
City of Madison
City of Middleton
City of Monona
City of Stoughton
City of Sun Prairie
City of Verona
Deerfield
Marshall
Mazomanie
Mount Horeb
Oregon
Stoughton
Sun Prairie
Verona
Waunakee
Windsor
Cottage Grove
Cross Plains
Black Earth
Blue Mounds
Brooklyn
Belleville
Monona
Middleton
Madison
Fitchburg
Monroe
Albany
Evansville
Janesville
Beloit
Portage
Baraboo
Wisconsin Dells
Lambert Conformal Conic Projection
Dane County Coordinate System: NAD 83(91)
Rev: 10/2006

#3 Increase funding for TDM incentives (funding match for free or discounted bus passes, vanpool subsidies, free bicycle tune-ups, etc.), support services (e.g., guaranteed ride home program, bicycle commuting classes) and marketing (materials, advertising). [WisDOT, Dane County, local governments]

#4 Continue to encourage telecommuting/e-Work and alternative work schedules. [Madison Area MPO, state and local governments]

#5 Continue to encourage employer participation in alternative transportation incentive programs such as Commute Choice, unlimited bus passes, and "parking cash out." [Madison Area MPO, Metro Transit, state and local governments]

#6 Support selective application of mandatory TDM strategies (e.g., designation of employee transportation coordinator, Commute Choice program, etc.) for large developments and areas with significant existing or projected congestion problems. [Madison Area MPO]

#7 Support establishment of Transportation Management Associations (TMAs) in the larger employment centers and other areas with the highest traffic congestion. [Madison Area MPO, local governments]

#8 Continue and seek to expand the Smart Commute program, a loan program that gives homebuyers the opportunity to qualify for a larger mortgage if they purchase a home along a Metro route. [Metro Transit, local governments, private sector]

#9 Explore potential public-private partnerships for door-to-door or stop-to-stop demand responsive transit services to reduce single-occupant vehicle trips. [Dane County, Madison Area MPO, and others]

Bicycle Transportation

Bicycling is an important mode of transportation and a healthful recreational activity. It is a particularly efficient and convenient form of transportation in urban areas where destinations are closer together. Like the automobile, the bicycle provides a high degree of independence, flexibility, and freedom of choice relative to schedule and destination. The City of Madison is recognized as one of the most "bicycle-friendly" communities in the U.S. due to the extensive network of bicycle facilities, relatively high levels of bicycling, and strong institutional and public support for bicycling.

The Madison Area MPO prepared a comprehensive regional bicycle plan in 2000. The Bicycle Transportation Plan for the Madison Urban Area and Dane County covers the "four Es" of engineering (facility improvements), education, encouragement, and enforcement. It includes a vision statement, three broad goals, and a detailed set of objectives and recommendations within the following categories: (1) facilities planning and development; (2) facilities maintenance; (3) parking and other support facilities and transit connections; (4) education and encouragement; and (5) enforcement.

The 2000 bicycle transportation plan identified and prioritized both on-street bicycle facility needs and proposed off-street paths. On-street facility improvement needs were based on an analysis of the compatibility for bicycling of the arterial and collector roadways in the Madison area and rural Dane County. Recommended bicycle routes were also identified.

As part of this overall regional transportation plan update, an updated countywide bikeway system plan was prepared to incorporate new information and detailed neighborhood and local bicycle facility plans that have been prepared since 2000 for communities within the now expanded MPO planning area. A regional bikeway system was identified that provides important connections through the Madison urban area and between communities, thereby providing access to major destinations such as employment centers, shopping areas, schools, and parks. Figure 44 on page 152 shows the planned bikeway system. The regional system is shown in red (off-street facility) and maroon (on-street facility). This regional bikeway system serves as a core system that local communities preparing neighborhood plans and developers planning projects can tie into with connecting local bikeway facilities. Figure 44 shows additional planned local bikeways in green (off-street) and gray (on-street). The planned regional system highlights high priority projects for potential federal funding. Table 25, on page 153, lists these high priority regional projects.

The bicycle transportation goal, policy objectives, and recommendations/implementation strategies are listed below. The recommendations are grouped by the following categories: system preservation; facility planning and development; and education and enforcement.

Goal: Provide for the safe, convenient and enjoyable travel by bicyclists throughout the region.

Policy Objectives

#1 Maintain and reconstruct existing bicycle facilities in a manner that promotes safety, increases convenience, and minimizes lifetime costs.

#2 Develop a continuous, interconnected system of bikeways providing reasonably direct, enjoyable, and safe routes within and between neighborhoods and communities throughout the region.

#3 Provide on-street bicycle facilities on arterial and collector roadways where feasible and appropriate given available right of way, traffic volumes and speeds, and other factors.

#4 Eliminate bicycling hazards and barriers.

#5 Provide necessary bicycle system support facilities and improve accessibility to transit and other transportation modes.

#6 Encourage bicycle travel for transportation as well as recreational purposes.

#7 Reduce bicycle crashes through a comprehensive "3-E" approach that includes education, training, enforcement, and implementation of cost-effective engineering counter-measures (i.e., bike lanes, intersection reconfiguration, new or modified traffic control devices, etc.).

Recommendations/Implementation Strategies

System Preservation

#1 Budget for and provide regular maintenance (sweeping, snow plowing, repair of surface defects) of on- and off-street bicycle facilities. [Dane County, local governments]

#2 Monitor the surface condition of existing multi-use paths and trails, and provide routine maintenance (e.g., crack filling) to preserve the facilities and minimize lifetime costs. [Dane County, local governments]

Facility Planning and Development

#3 Develop the recommended regional bikeway system. See Figure 44, Regional Bicycle Way System Plan, on the next page. Prioritize for Federal Enhancement and state funding high priority projects on this system listed in the Table 25, on page 153, as well as those that provide important connections to the system. [Dane County, local governments]

The high priority bicycle projects listed in Table 25 are significant components of the regional bikeway system because they fill in gaps or missing links in the existing system, provide regional connectivity and access to neighborhoods or activity centers, improve overall system safety, and/or overcome significant barriers such as major highways.

#4 Continue to implement the recommendations in the *Bicycle Transportation Plan for the Madison Urban Area and Dane County* (2000). Update the plan within the next few years, expanding the coverage to include the new larger urban area. [Dane County, local governments, Madison Area MPO]

#5 Continue to develop and implement local bicycle plans, using the regional bicycle plan and regional bikeway system plan map as a resource and framework. [Local governments]

#6 Improve and expand upon the current signed Madison area bicycle route system, coordinating the routes with those of neighboring jurisdictions and Dane County. [Dane County, local governments]

FIGURE 44

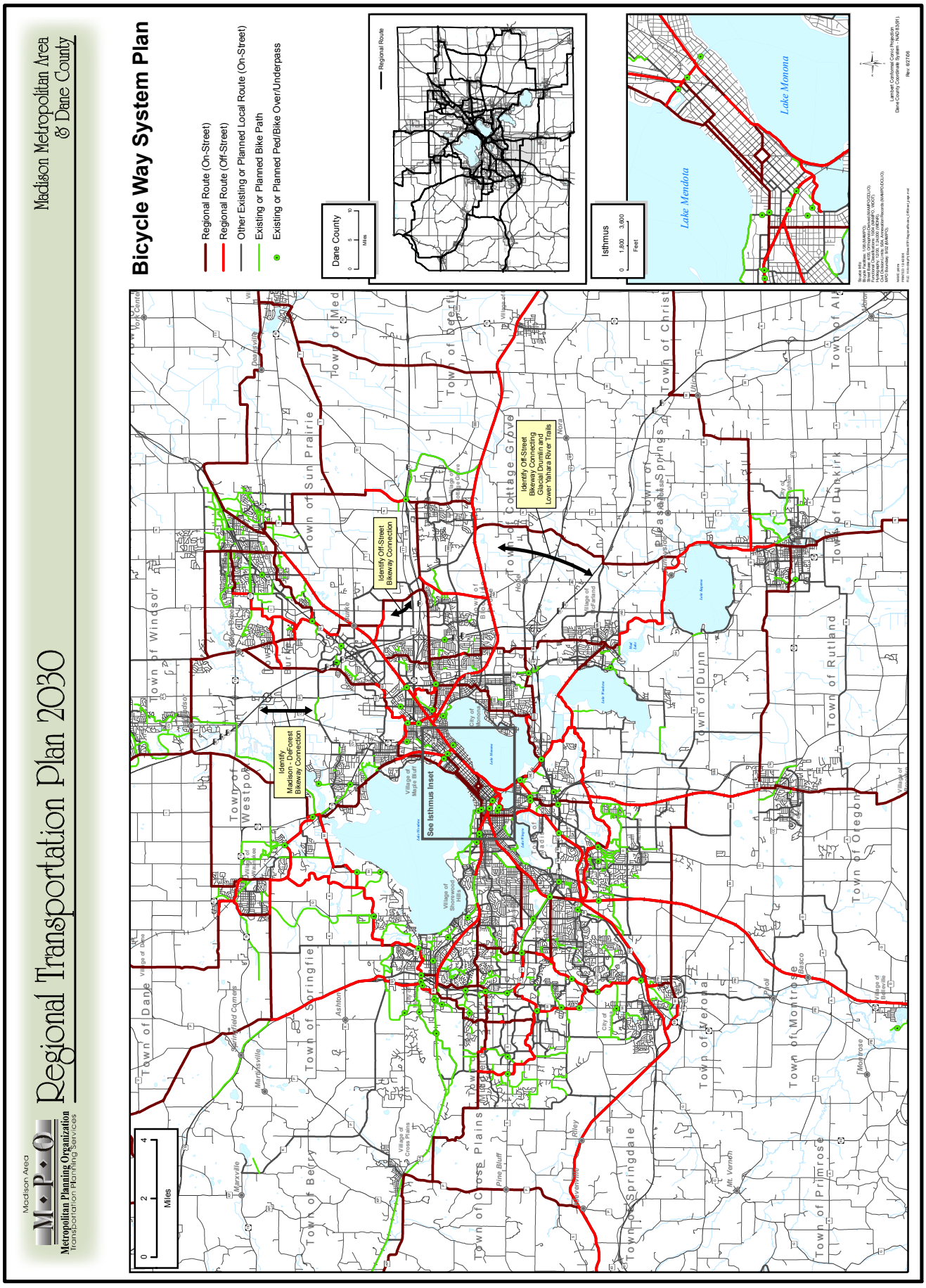

Madison Area
M•P•O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area
& Dane County
Bicycle Way System Plan
Regional Route (On-Street)
Regional Route (Off-Street)
Other Existing or Planned Local Route (On-Street)
Existing or Planned Bike Path
Existing or Planned Ped/Bike Over/Underpass
Dane County
Regional Route
Isthmus
Lake Mendota
Lake Monona
Identify Off-Street Bikeway Connection
Identify Off-Street Bikeway Connecting Glacial Drumlin and Lower Yahara River Trails
Identify Madison to Forest Bikeway Connection
See Isthmus Inset
Miles
Feet

TABLE 25
HIGH PRIORITY OFF-STREET BICYCLE FACILITY PROJECTS ON THE IDENTIFIED REGIONAL BIKEWAY SYSTEM

Path/Corridor Location	Segment	Implementer(s)	Comments
Programmed Projects with Approved or Committed Funding			
Badger State Trail	Sun Valley Pkwy. to Belleville/County Line	WisDNR	Southern, unpaved portion of trail
Campus Drive/Rail Corridor Path	University Bay Dr. to Linden @ VetMed Bldg.	UW-Madison	Removes barrier in high demand University Ave. corridor
Capital City Trail (E-Way Segment)	Bike/Ped Overpass of Fish Hatchery Rd./CTH D	C. Fitchburg	Improves safety, path continuity
Capital City Trail (East Segment)	Cottage Grove Rd. to Buckeye Rd.	C. Madison	Improves USH 51 corridor mobility.
CTH M Corridor (North) Path	CTH M Bike/Ped Underpass South of Oncken Rd.	Dane County	Connection to Gov. Nelson Park
Starkweather Creek (W Branch) Path	Existing path N of Aberg Ave. to Milwaukee St.	C. Madison	Eventual connection to East Isthmus Rail Path
	Aberg, E. Washington Ave. Bike/Ped Overpasses	C. Madison, WisDOT	Removes major barriers, provides path continuity
USH 151 Corridor Path	Capitol Ave. to Nelson Rd.	WisDOT	Includes bike/ped underpass near Capitol Ave./Terra Ct.
Yahara River Parkway Path	E. Washington Ave. Bike/Ped Underpass	WisDOT	Being constructed as part of E. Washington reconstruction
	E. Johnson to Williamson St.	C. Madison	Improves cross-isthmus mobility
Proposed Projects			
Badger State Trail	Capital City Trail to Sun Valley Pkwy.	WisDNR, C. Fitchburg	Northern section of trail to be paved
Blooming Grove Drumlin Path	Gaston Rd. to CTH AB	C. Madison, Dane Cty.	Connects Sprecher Neigh. to Capital City Trail ext.
Cannonball Trail	Fish Hatchery Rd. to Military Ridge Trail (in rail corridor), including grade-separated Beltline crossing	C. Fitchburg, Madison, WisDNR	Alt. bike-friendly route in Fish Hatchery Rd. corridor; alt. more level route to CCT through Fitchburg
Capital City Trail (CCT) (Eastern Segment)	Buckeye Rd. (C. Madison) to V Cottage Grove	C. Madison, WisDNR	Connection to the Glacial Drumlin Trail
Capital Springs Connector Path	CCT @ Lake Farm Rd. to V McFarland in Rail Corridor	Dane Cty., V McFarland	Connection to CCT, Capital Springs State Park
CTH M (North) Corridor Path	STH 113 to Woodland Dr.	T. Westport, Dane Cty.	Connection bet. Waunakee/Westport and North Madison
(North Mendota Trail)	Woodland Dr. to Gov. Nelson Park	Dane County	Provides suitable, direct bike route to Gov. Nelson Park
	Gov. Nelson Park to Pheasant Branch Trail System	Dane County	Connection bet. Middleton and Gov. Nelson Park
CTH M (West) Corridor Path	W. Beltline Corridor Path to Ice Age Junction Path, incl. potential grade-separated crossings of CTH M	C. Madison, Dane Cty.	Connects to Ice Age Junction Path; Alt. E-W rte. to Watts Rd.
Ice Age Junction Path	Elver Park Path to Military Ridge State Trail, incl. Verona Rd. (CTH MV) Bike/Ped Underpass	C. Madison, Dane Cty.	Links Elver, Badger Prairie Parks and Military Ridge Trail Major N-S route on West side
Junction Ridge Path/Overpass	W. Beltline Overpass south of Old Sauk Road	C. Madison	Alt. to Old Sauk Rd. interchange area for major E-W route
Lower Yahara River Trail	V. McFarland to C. Stoughton	Dane Cty., V. McFarland C. Stoughton	Connects communities to Lake Kegonsa State Park along river and rail corridors
NE Greenspace/West Sun Prairie Path	USH 151 to STH 19	C. Sun Prairie	Connection to Token Creek Park; N-S corridor east of I-94
Pheasant Branch Creek Trail Enhancements	USH 12 to Century Ave.	C. Middleton	Bridges, paving, etc. of trail to improve accessibility
Sherman Flyer Path	Yahara River Parkway Path to Sheridan Dr.	C. Madison	Provides bike-friendly route in Sherman Ave. corridor
S. Beltline Bike/Ped Overpass	At Perry Street	WisDOT, C. Madison	Connects resid., employment areas; removes barrier to N-S rte.
Southwest Path (UW Campus) Extension	University Ave. to existing SW Path ("Missing Link")	UW-Madison	Connects Campus Drive path to SW path and John Nolen path
Starkweather Creek (W Branch) Path	Milwaukee St. to Capital City Trail (Isthmus segment)	C. Madison	Via Devon Greenway and Worth Park
Starkweather Crk. (E. Branch) Path	Starkweather Crk. Path to Marsh View Path	C. Madison	Potential path link once quarry closed, site redeveloped
	Marsh View Path to City View Dr.	C. Madison	Might locate in RR corridor; important NE link
Wisconsin & Southern Rail Corridor Path	City View Drive to S. Bird Street in Sun Prairie	C Madison, C Sun Prairie	Direct connection bet. downtown Sun Prairie and Madison
UW Research Park Connector Path	Enterprise Ln. to Research Park/Tokay Blvd.	C. Madison	Provides alt. through route in Mineral Pt./Odana Rd. corridor
W. Beltline Corridor Path	Commerce Dr. to Beltline Underpass at Struck Street	WisDOT, C. Madison	Provides E-W route in Beltline/Mineral Point Rd. corridor
Wisconsin River Rail Corridor Path	Shorewood Blvd. to University Bay Dr.	V. Shorewood	Removes bike mobility barrier in University Ave. corridor
	Linden at MedVet Bldg. to Babcock Dr.	UW-Madison	Removes bike mobility barrier in University Ave. corridor
	Old Middleton Rd @ Eau Claire to Black Earth Crk Path	C. Madison, Middleton	Serves same corridor as Old Middleton Rd/Elmwood St.

#7 Adopt land use development ordinances and street design standards to ensure that neighborhoods are designed to provide for direct, safe bicycle and pedestrian connections within the neighborhood and to nearby activity centers and major destinations. [Local governments]

#8 Provide bicycle accommodations and safety devices (bicycle-proof drain grates, rubberized pads at rail crossings, etc.) in conjunction with (re)construction of the street system, where feasible and appropriate. [WisDOT, Dane County, local governments]

All streets in the metropolitan area and Dane County should be designed to safely accommodate bicyclists and pedestrians if at all possible. This includes provision of bike lanes or paved shoulders where traffic volumes warrant such facilities, sidewalks, and accommodations for safely crossing streets. Despite the existing and planned network of multi-use paths, the street system will always make up the bulk of the bicycle facility network. As part of development of the 2000 *Bicycle Transportation Plan for the Madison Urban Area and Dane County*, Madison Area MPO staff conducted an assessment of the need for bicycle accommodations on the regional arterial and collector roadway system. It is proposed that MPO staff update this roadway suitability analysis as part of the planned future bicycle plan update.

#9 Provide grade-seperated crossings of limited access or other major roadways in conjunction with roadway construction and reconstruction work, where feasible and appropriate. [WisDOT, Dane County, local governments]

#10 Proactively acquire land or secure dedications of land or access easements for bikeways or bikeway segments or connections in connection with utility rights-of-way, drainage ways, rivers, rail lines, and other corridors. This should be done in accordance with approved plans or as part of plat/development approval. [Local units of government]

#11 Improve the safety and convenience of major street crossings for bicyclists. [WisDOT, Dane County, local governments]

#12 Ensure that traffic signals work for bicyclists as well as motorists (e.g., detector loops are tuned to detect bicyclists). [Local governments]

Education and Enforcement
#13 Continue to update and distribute the Madison area and Dane County bicycle maps and other informational materials.

#14 Continue to support and expand upon bicycle safety education and training programs and activities for the public and professional staff.

#15 Continue to support and expand upon enforcement efforts by properly trained personnel, focusing on those violations most likely to lead to bicyclist-motorist crashes. [Local police departments and others]

Pedestrian Transportation

As with bicycling, walking forms an important part of the transportation picture and is also a healthful recreational activity, providing social and economic benefits to the region. Walking is the most feasible and economical form of transportation for many people, including those with special needs. It is the second most common mode of transportation, accounting for 14% of trips by City of Madison residents and 7% of trips by other county residents. Walking is an essential part of all trips, whether they are made by car, bus, or bicycle (e.g., walking from the parking lot to the store or from home to the bus stop).

State law defines a "pedestrian" as any person walking, standing, or in a wheelchair. Pedestrian facilities include sidewalks or other walkways, facilities in holding or queuing areas at street intersections or mid block (e.g., curb ramps, bus boarding pads, signals), and facilities for crossing streets (e.g., crosswalks, refuge islands). These facilities are necessary for safe and convenient pedestrian travel (particularly those with a mobility limitation) and should be included as part of "complete" streets. Walking for transportation as opposed to purely recreational/fitness purposes is most convenient and practical in compact urban areas with mixed land uses that put destinations closer to where people live.

The pedestrian transportation goal, policy objectives, and recommendations/implementation strategies are outlined below. The recommendations are grouped by the following categories: system preservation; facility planning and development; and education and enforcement.

Goal: Provide for safe, convenient and enjoyable pedestrian travel throughout the region.

Policy Objectives

#1 Maintain and reconstruct existing pedestrian facilities in a manner that promotes safety, increases convenience, and minimizes lifetime costs.

#2 Improve the accessibility of pedestrian facilities for persons with disabilities or special needs.

#3 Develop a continuous, interconnected pedestrian facility network providing reasonably direct and safe routes within and between neighborhoods to destination points in all directions.

#4 Promote mixed-use development, where appropriate, to provide as many destinations as possible within walking distance.

#5 Provide connections within and between developments to buildings, bus stops, and other destinations with off-street pedestrian facilities.

#6 Provide safe, convenient street crossings through intersection/crosswalk design, traffic control devices, and use of accessible facilities.

#7 Accommodate pedestrians and seek to minimize conflicts between pedestrians and other modes of travel as improvements are made to the transportation system.

#8 Encourage walking for transportation as well as recreational purposes.

#9 Reduce crashes involving pedestrians through a comprehensive "3-E" approach that includes education, enforcement, and implementation of cost-effective engineering counter-measures (i.e., intersection design, traffic calming techniques, new or modified traffic control devices, etc.).

Recommendations/Implementation Strategies

System Preservation

#1 Budget for and provide regular maintenance (repair of surface defects, snow plowing) of sidewalks and other facilities (lighting, plantings, etc.) adjacent to pedestrian areas. [Dane County, local governments]

Facility Planning and Development

#2 Develop and implement local pedestrian policy and facility plans. [Local governments]

#3 Continue to review and improve street design/sidewalk standards to ensure that streets are not over-engineered and are designed to meet the needs of pedestrians as well as motorists. [Local governments]

#4 Provide pedestrian accommodations in conjunction with all new street construction and reconstruction projects where feasible and appropriate in accordance with the U.S. Department of Transportation Policy on Integrating Bicycling and Walking into Transportation Infrastructure. [WisDOT, Dane County, local governments]

#5 Continue to review and improve land use development ordinances to remove any barriers to developing pedestrian areas, and ensure that new developments include pedestrian circulation plans and are well integrated with adjacent land uses, providing reasonably direct routes between destination points. [Local governments]

Zoning ordinances tend to focus on ensuring that a site has adequate parking and provides for safe vehicular circulation. However, pedestrian circulation is often overlooked. In addition, because zoning focuses on sites, connections between sites are also often overlooked. Many ordinances also require buffers, separations between uses, and perimeter fencing that become barriers to pedestrian activity. These barriers should be identified and rectified. Direct routes between destination points are extremely important because out-of-direction travel discourages walking. Pedestrian overlay districts should be considered for downtown and other pedestrian destination areas.

#6 Ensure that all new or reconstructed sidewalks and other pedestrian facilities comply with the provisions of the American with Disabilities Act (ADA). [Local governments, Dane County, WisDOT]

#7 Improve the safety and convenience of major street crossings for pedestrians. [WisDOT, Dane County, local governments]

Examples of things that can be done include: adding pedestrian refuges and/or curb extensions; use of smaller curb radii; adjusting traffic signal timing; improved signage and crosswalk markings; and installation of count-down pedestrian signals. WisDOT is in the process of developing detailed planning, design, and program information for pedestrian safety and mobility that will be included in Best Practices Guide, similar to the Bicycle Facility Design Handbook published in January 2004.

#8 Continue to develop and improve neighborhood traffic management programs to address problems with speeding and cut-through traffic on local streets, and incorporate the same principles and techniques into new developments. [Local governments]

#9 Develop safe routes to school programs and consider pedestrian/bicyclist access in identifying school sites. [Local governments, school districts, WisDOT]

A new Federal funding program—Safe Routes to Schools–was established in SAFETEA-LU. WisDOT has hired a program coordinator and is in the process of implementing the new program in Wisconsin. Grants will be awarded through a statewide competitive process. A minimum of 70% of available Federal funding must be used for infrastructure projects. Grant applications are anticipated to be available by early 2007. Examples of eligible projects include: sidewalk improvements; traffic calming projects and other speed reduction initiatives; pedestrian/bicycle crossing improvements; and secure bike parking.

The following planning steps are recommended for local communities developing a safe routes to school program:

- *Involve the entire community*. Meet with teachers, parents, planners/engineers, law enforcement officers, local health officials, politicians, and others. Start a committee that includes as many of these groups as possible.
- *Collect data through surveys*. Survey the number of children walking and bicycling to school now, which will help identify problems and evaluate the program in the future.
- *Map current school routes*. Create maps of routes currently used for walking and bicycling to school, indicating unsafe areas and potential solutions and/or alternative routes.
- *Analyze problems*. Based on the survey data and school route maps, identify problems and discuss them with the community.
- *Identify needed projects*. Identify high priority infrastructure improvement projects as well as educational and law enforcement activities to address problems.

#10 Prepare and implement ADA compliance plans to retrofit existing non-conforming facilities, prioritizing those in areas with higher levels of pedestrian activity and areas with concentrations of elderly and persons with disabilities. [Local governments]

#11 Implement programs to install accessible (e.g., audio/tactile) pedestrian signal systems and other ADA accessibility treatments where a need is demonstrated. Create policy and procedure (e.g., request form) for installing accessible pedestrian traffic signals where a need is demonstrated. [Dane County, local governments]

The City of Madison is in the process of adopting a policy, creating a procedure (request form), and posting the information on its Web site.

Education and Enforcement
#12 Continue to support and expand upon pedestrian safety education and training programs and activities for the public and professional staff.

#13 Continue to support and expand upon enforcement efforts, focusing on the crosswalk law, speeding, red light running, and other violations most likely to lead to pedestrian-motorist crashes. [Local police departments and others]

The following sections include the goals, policy objectives, and recommendations/implementation strategies for inter-regional, freight, rail transportation, air transportation, parking, and corridor preservation.

Inter-regional Travel

Goal: Provide a variety of quality, safe inter-regional transportation options for the region's residents and visitors, maximizing connections to the regional transportation system.

Policy Objectives
#1 Maintain existing facilities and services and develop new and expanded ones to increase inter-regional travel options (e.g., intercity bus service, high speed passenger rail service, Interstate system and other key routes).

#2 Insure that regional attractions are easy to find using inter-regional travel facilities.

Recommendations/Implementation Strategies
#1 Support private sector efforts to improve inter-city bus service and facilities, and improve local bus service connections to the inter-city bus terminal and other existing or potential stops to the extent possible. [WisDOT, local governments]

#2 Support provision of rail-related infrastructure improvements and other activities of the Midwest High Speed Rail Initiative to promote and implement inter-city passenger rail service to Madison. [WisDOT, local governments]

#3 Continue exploring the potential for a downtown Madison high-speed rail station site in addition to the airport station. [City of Madison]

#4 As planning for both inter-city and local rail service continues, explore opportunities in the future for developing a downtown Madison intermodal transportation center for bus, rail, taxi, and other modes.

Freight

Goal: Provide for safe, efficient, and reliable movement of goods within and through the region in order to support the region's economy and residents' quality of life.

Policy Objectives
#1 Maintain and reconstruct existing roadways, bridges, and railways in a manner that promotes safety, increases efficiency, and minimizes lifetime costs.

#2 Address significant transportation issues that may negatively impact industrial parks/sites, shipping/trucking operations, and agricultural establishments.

#3 Develop and expand transportation facilities to accommodate freight movement and meet the changing needs of the regional economy.

#4 Enhance intermodal freight transportation opportunities for movement of goods into and out of the region.

#5 Reduce crashes involving heavy trucks.

#6 Minimize and/or mitigate the negative impacts of trucking on adjacent residential areas

Recommendations/Implementation Strategies
#1 Continue to incorporate freight considerations into future corridor and other planning studies and the PE/design phases of major reconstruction projects on existing or potential future truck routes. [WisDOT, local governments]

A freight committee/group was created for the USH 51 Corridor study because of the corridor's importance for freight.

#2 Continue to identify and correct existing safety deficiencies on the freight network related to roadway geometry and traffic controls; at-grade railroad crossings; traffic congestion at intersections/interchanges; truck traffic in neighborhoods; and other factors. [WisDOT, Dane County, local governments]

#3 Identify priority freight projects and others that improve the safety and efficiency of goods movement. Coordinate the scheduling of such projects with any related private projects. [WisDOT, local governments]

#4 Determine if there is interest by the freight industry in establishing a state and/or regional multi-county freight planning committee. [WisDOT, Madison Area MPO]

#5 Conduct survey and/or focus group of freight industry (rail and trucking) representatives regarding important transportation system issues and needs. [Madison Area MPO]

#6 Promote (re)development of existing and planned industrial areas along rail lines with rail freight-oriented businesses as a mechanism to enhance the region's economic development base.

Rail Transportation

Goal: Preserve rail corridors and provide safe and convenient rail facilities and service to meet rail passenger and freight transportation needs for the region.

Policy Objectives
#1 Preserve rail corridor lands throughout the county for current and future transportation and other public uses.

#2 Maintain and improve freight rail access to the region and continue rail freight service to all users where justified and needed.

#3 Work with rail companies to consolidate rail tracks, and seek to use excess rail lands for alternative transportation or scenic/recreational uses.

#4 Work with rail companies to address potential conflicts between new passenger rail service and freight rail service.

#5 Ensure safe street/railway crossings.

Recommendations/Implementation Strategies
#1 Promote (re)development of existing and planned industrial areas along rail lines with rail freight-oriented businesses as a mechanism to enhance the region's economic development base.

#2 Continue to obtain any abandoned rail right-of-way for use as multi-use paths or other future transportation purposes, while maintaining the potential for rail transportation in the future.

#3 Support provision of rail-related infrastructure improvements and other activities of the Midwest High Speed Rail Initiative to promote and implement inter-city passenger rail service to Madison. [WisDOT, local governments]

#4 Continue planning for a potential downtown Madison inter-city rail station site in addition to the airport, and make sure airport plans are coordinated with plans for rail service to the airport. [City of Madison, WisDOT]

#5 Install suitable gates at rail crossings of roadways that prevent motorist from "running around" the gates, thereby improving safety and allowing establishment of "quiet zones" within which locomotive horns are not routinely sounded.

Air Transportation

Goal: Provide safe and convenient airport facilities and service to meet air passenger and freight transportation needs for the region.

Policy Objectives
#1 Coordinate airport and local land use planning to minimize the negative impacts of air service on residential areas and prevent incompatible development within airport safety zones.

#2 Improve airport facilities to enhance usability and convenience and attract additional air services.

#3 Enhance connections to the airport by all modes of transportation.

Recommendations/Implementation Strategies
#1 Continue implementation of the Airport Master Plan. [Dane County]

#2 Continue to work together to address the impacts of current and planned future expansion of airport activities on residential areas. [Dane County, local governments]

#3 Determine the demand for improved bus service (e.g., addition of weekend service) to the airport, and implement if determined to likely be successful. [Metro Transit, Dane County]

#4 Continue to maintain and improve the Middleton Municipal Airport–Morey Field as the primary reliever airport for the Dane County Regional Airport. [City of Middleton, WisDOT]

Parking

Goal: Provide for the maintenance and construction of parking facilities as part of an integrated and balanced land use and transportation system.

Policy Objectives
#1 Promote parking management strategies that encourage the use of alternative modes of transportation, while at the same time meeting user needs.

#2 Make efficient use of parking facilities through shared parking agreements, intelligent transportation systems (ITS) technologies, and other management strategies.

#3 Encourage structured parking in major employment/activity centers.

#4 Develop alternatives to all day commuter parking in the central Madison area and other congested activity/employment centers in the metropolitan area.

Recommendations/Implementation Strategies

#1 Continue efforts to increase use of parking management strategies (e.g., incentives for structured parking, shared parking arrangements, preferential parking for carpoolers, etc.) in downtown areas and other major activity centers. [Local governments]

#2 Develop and implement a downtown Madison parking management plan that includes:

- An inventory and usage survey of all parking facilities, both public and private, in the downtown area.
- An assessment of the cost of providing parking and revenues generated in order to make a policy decision on the share of costs to assess public parking users.
- An evaluation of strategies for minimizing long-term parking demand and effectively allocating the most convenient parking to customers.
- An assessment of the viability for creating additional short-term parking on some downtown streets.

  [City of Madison Traffic Engineering Division]

#3 Review local minimum parking requirements to determine if they might be lowered for some uses or areas, provide exemptions or variances from these requirements, where appropriate, and consider establishing maximum parking requirements for some areas. [Local governments]

#4 Continue efforts to use new technology, where affordable and cost effective, to increase parking convenience and efficiency, improve downtown area traffic conditions (e.g., providing real-time information on parking availability), encourage adherence to parking time limits, and increase parking revenue (e.g., using electronic meters that summon parking officers when meters expire and reset to zero when cars pull away from space). [City of Madison and other local governments]

Corridor Preservation

Goal: Preserve lands that may be needed for possible future transportation uses.

Recommendations/Implementation Strategies

#1 Continue to undertake official mapping of new and/or expanded future anticipated roadway and bikeway corridors, particularly for developing areas, as soon as sufficient information is available to determine recommended right-of-way width and corridor alignment. [Local governments]

#2 Continue to preserve rail corridors as special transportation corridors for future yet-to-be-determined uses, and discourage conversion of such corridors for non-transportation related uses. [Local governments, WisDOT]

Financial Analysis

Financial Capacity Analysis

Introduction

This section of the Regional Transportation Plan 2030 presents an assessment of the financial capacity of transportation providers in the Madison Metropolitan Planning Area to implement the street, highway, transit, and other transportation improvements identified in the plan. The term "financial capacity" refers to the ability of each provider of transportation facilities and services to maintain and preserve the existing transportation system and to finance the planned improvements described earlier in the plan.

A financial capacity analysis is required by the recently enacted Safe, Accessible, Flexible, Efficient, Transportation Equity Act – A legacy for Users (SAFETEA-LU) to demonstrate that metropolitan area transportation plans are fiscally constrained, which means the costs of the projects included in a plan and the maintenance and preservation of the existing transportation system can be covered using available and projected funding sources. When projected shortfalls exist, the regulations also require that new sources of revenue be identified. However, the plan may include, for illustrative purposes, additional projects that would be included in the adopted transportation plan if reasonable additional resources beyond those identified in the financial plan were available.

The financial capacity analysis considers the trends in sources and uses of funds, and estimates the ability of existing funding sources to meet the maintenance, preservation, and improvement needs of the transportation system, and is presented in the following sections.

Historical Funding Trends

The Madison Metropolitan Area's capacity to maintain, preserve, and improve its transportation system is largely defined by the conditions that exist today. The current institutional structures, trends in sources and use of funds, and trends in various tax bases can also affect future revenues. To know what resources can be expected to be made available to carry out the Regional Transportation Plan 2030, past funding efforts by local, state, and federal entities need to be determined.

Municipal Streets and Roadways

Municipal streets are largely financed by local sources. The sources include special assessments, impact fees, and general revenues. The metropolitan area municipalities also use funds from the state's General Transportation Aids program and the federal Surface Transportation Program (STP) to finance projects. A subcategory of the STP program is the STP-Urban program, which provides a designated funding amount to the Madison Urban Area since it is an area over 200,000 in population. The STP Urban funding allocation for the Madison Urban Area increased to $5 million per year in 2002, $5.3 million in 2004, and $6.2 million in 2006. Funding levels for 2007-2010 are uncertain at this time but are expected to be in the $5.3 to $6.2 million range.

Table 26, Historical Local Street and Roadway Expenses, on the next page, shows the operating and maintenance costs, construction costs, and other associated costs for those units of government in the Madison Area MPO's Planning Area from the year 2001 to 2004. The information was derived from the reports, *Revenues & Expenditures by Wisconsin Counties, Cities, Villages & Towns (2000-2004)*, published by the Wisconsin Department of Revenue. Operations and maintenance figures represent the combination of two reported categories, "Highway Maintenance and Administration" and "Road Related Facilities." For those units of government that are partially within the MPO Planning area, the reported figures were adjusted based on the percent of their street system in the MPO Planning Area. Total annual costs from 2001-2004 range from $64.2 million to $84.2 million with an annual average of $72.3 million.

State Highway System

The state and federal highway funding sources that have typically been used for many years in the Madison Metropolitan Planning Area include:

- Interstate Maintenance (I/M)
- National Highway System (NHS)
- Surface Transportation Program (STP) State Flexible

TABLE 26
HISTORICAL LOCAL STREET AND ROADWAY EXPENSES (000's)

	2001				2002				2003				2004			
County/ Municipality	**O & M**	**Const.**	**Other**	**Total**	**O & M**	**Const.**	**Other**	**Total**	**O & M**	**Const.**	**Other**	**Total**	**O & M**	**Const.**	**Other**	**Total**
Dane County	7,000.3	2,323.9	0.0	9,324.2	7,275.5	2,028.3	17.0	9,320.8	8,058.4	2,147.5	0.0	10,205.9	7,422.6	2,476.7	22.0	9,921.3
C. Fitchburg[2]	1,548.4	371.1	205.7	2,125.2	1,649.7	947.6	203.5	2,800.9	1,144.3	774.8	171.8	2,091.0	1,160.9	1,151.1	173.6	2,485.5
C. Madison	14,031.6	12,117.1	4,445.9	30,594.6	11,063.4	12,348.1	2,577.5	25,989.0	11,188.2	13,694.7	3,126.9	28,009.8	13,840.7	18,540.3	775.0	33,156.0
C. Middleton	1,534.8	1,545.2	472.0	3,552.0	1,533.1	5,173.6	824.1	7,530.8	7,898.8	11,388.5	1,819.1	21,106.4	1,970.0	428.4	423.6	2,822.0
C. Monona	591.1	474.4	0.0	1,065.5	765.4	398.9	0.0	1,164.3	702.3	352.6	0.0	1,054.9	904.2	449.4	0.0	1,353.6
C. Stoughton	2,057.2	368.8	145.3	2,571.3	2,411.3	1,248.4	163.4	3,823.1	1,598.5	616.6	171.9	2,387.0	1,466.9	393.0	159.4	2,019.3
C. Sun Prairie	2,567.2	2,778.8	231.3	5,577.3	2,227.5	1,780.0	257.8	4,265.3	2,735.3	1,763.6	269.8	4,768.7	3,907.7	1,605.8	485.4	5,998.9
C. Verona	1,823.3	1,617.4	0.0	3,440.7	935.8	949.7	0.0	1,885.5	2,918.4	858.5	0.0	3,776.9	4,699.6	298.0	0.0	4,997.6
V. Cottage Grove	415.1	329.5	0.0	744.6	299.3	10.3	0.0	309.6	1,033.2	2,005.5	0.0	3,038.7	628.4	67.0	0.0	695.4
V. Maple Bluff	137.0	0.0	0.0	137.0	101.7	0.0	0.0	101.7	108.7	0.0	0.0	108.7	168.3	58.0	0.0	226.3
V. McFarland	717.9	44.7	0.0	762.6	733.9	80.2	0.0	814.1	954.6	118.2	0.0	1,072.8	885.0	215.4	0.0	1,100.4
V. Shorewood Hills	781.5	880.7	1.6	1,663.8	228.8	222.5	3.2	454.5	309.3	335.5	2.2	647.0	298.0	48.7	2.1	348.8
V. Waunakee	1,664.3	1,109.2	114.7	2,888.2	1,435.0	616.4	155.6	2,207.0	1,213.0	662.3	5.9	1,881.2	983.5	1,745.3	21.7	2,750.5
T. Blooming Grove	74.5	82.9	0.0	157.4	110.4	241.7	0.0	352.1	105.7	2.5	0.0	108.2	120.2	90.2	0.0	210.4
T. Bristol[3]	54.8	0.0	0.0	54.8	86.3	0.0	0.0	86.3	91.3	0.0	0.0	91.3	63.9	0.0	0.0	63.9
T. Burke	196.2	119.3	0.0	315.5	137.1	54.2	0.0	191.3	225.1	310.8	0.0	535.9	304.3	186.8	0.0	491.1
T. Cottage Grove[4]	147.6	55.0	0.0	202.6	132.0	46.3	0.0	178.3	108.4	64.0	0.0	172.4	167.4	50.7	0.0	218.1
T. Dunkirk[5]	52.0	0.0	0.0	52.0	34.0	22.5	0.0	56.5	53.8	0.0	0.0	53.8	50.3	0.0	0.0	50.3
T. Dunn[6]	452.4	78.6	0.0	531.0	285.1	110.6	0.0	395.7	265.1	131.0	0.0	396.1	246.9	122.2	0.0	369.0
T. Madison	329.3	0.0	75.0	404.3	262.9	182.9	81.3	527.1	392.2	447.4	83.7	923.3	363.1	1,136.9	84.0	1,584.0
T. Middleton	230.5	155.4	0.0	385.9	235.1	148.4	0.0	383.5	206.6	315.6	0.0	522.2	393.3	366.4	0.0	759.7
T. Pleasant Springs[7]	94.9	0.0	0.0	94.9	84.7	0.0	0.0	84.7	74.5	0.0	0.0	74.5	70.2	0.0	0.0	70.2
T. Rutland[8]	18.6	15.0	0.0	33.7	18.1	36.4	0.0	54.5	37.5	8.9	0.0	46.4	19.7	27.4	0.0	47.1
T. Springfield[9]	111.6	66.0	0.0	177.5	81.1	53.8	0.0	134.9	56.3	71.5	0.0	127.9	115.0	5.0	0.0	120.1
T. Sun Prairie[10]	88.0	51.5	0.0	139.5	92.4	30.4	0.0	122.8	140.4	64.9	0.0	205.3	131.1	5.1	0.0	136.2
T. Verona[11]	365.4	0.0	0.0	365.4	515.1	0.0	0.0	515.1	325.5	0.0	1.7	327.2	461.9	0.0	2.2	464.1
T. Westport[12]	299.2	118.6	0.0	417.8	268.2	131.0	0.0	399.2	153.9	263.8	0.0	417.7	156.4	286.4	0.0	442.8
T. Windsor[13]	41.9	2.0	0.0	43.9	35.0	3.3	0.0	38.3	31.9	36.2	0.0	68.0	30.4	24.1	0.0	54.5
Planning Area	**37,426.6**	**24,705.1**	**5,691.5**	**67,823.2**	**33,037.8**	**26,865.5**	**4,283.4**	**64,186.7**	**42,131.3**	**36,434.9**	**5,653.0**	**84,219.3**	**41,029.9**	**29,778.2**	**2,149.0**	**72,957.1**

1 Operations and Maintenance Costs
2 Estimated at 97.25%
3 Estimated at 28.21%
4 Estimated at 36.21%
5 Estimated at 23.50%
6 Estimated at 78.12%
7 Estimated at 27.56%
8 Estimated at 15.77%
9 Estimated at 37.92%
10 Estimated at 47.23%
11 Estimated at 65.16%
12 Estimated at 94.59%
13 Estimated at 8.00%

- STP Safety
- STP Rural (STP-R)
- Bridge Replacement & Rehabilitation (BR)

Table 27 illustrates federal and state funding of roadway projects programmed in the Transportation Improvement Program (TIP) for the Madison Metropolitan Planning Area from 2002 to 2006. Total annual spending costs from 2002-2006 range from a low of $22.8 million to a high of $64.1 million. Total federal and state funding of transportation projects (non-transit) for the same time period ranges from $29.9 million to $76.7 million with an annual average of 40.6 million.

These costs are further summarized in Table 28, on the next page, in which annual averages were generated for estimates of potential future revenues.

In the past, it was typically assumed that federal and state highway revenues would equal the amount of money needed to maintain and add to the highway system. However, the motor fuel taxes, registration fees, and other state and federal revenue sources that have traditionally funded these projects have not been able to keep up with the rapidly rising costs of maintaining and adding to the state's highway system. It is anticipated that the state's new transportation plan called Connections 2030 will address this issue.

Transit

The major transit operator in the Madison Metropolitan Area is Metro Transit, which is owned by the City of Madison and operates within the oversight of the Mayor, Common Council, and the City's Transit & Parking Commission. Metro contracts with other communities and public institutions (including UW-Madison and the Madison Metropolitan School District) to provide service. Most transit service is provided by Metro on regular fixed-routes using large buses. Other transit services include Metro paratransit service, other demand-responsive services, special event shuttles, state vanpools, and ridesharing services.

Funding has been a major challenge for the transit system in the past and will continue to be in the future due to the lack of a dedicated local funding source for transit and very tight budget situations at the state and local levels. Table 29, on page 167, shows the transit system's operating expenses and revenues from 2002-2006, which ranges from a low of $44.4 million to a high of $51.7 million with an annual average of $48.9 million.

TABLE 27
FEDERAL AND STATE SPENDING COSTS BY FUNDING SOURCE
NON-TRANSIT PROJECTS 2002-2006

	Funds Programmed ($000)						
	2002	2003	2004	2005	2006	5yr Total	Average/yr
A. ROADWAY FUNDS							
Federal							
Interstate Maintenance (I/M)	9,582	492	4,602	713	425	15,814	3,163
National Highway System (NHS)	3,409	2,118	22,468	19,696	14,309	62,000	12,400
Surface Transportation Program (STP) State Flexible	1,861	3,148	8,198	1,639	1,234	16,080	3,216
STP Urban (Madison Urban Area)	4,990	4,990	5,320	5,320	6,227	26,847	5,369
STP Safety	1,290	584	973	1,492	1,125	5,464	1,093
STP Rural			1,200	600	2,720	4,520	904
Bridge Replacement & Rehabilitation	118	492	827	81	1,558	3,076	615
Federal Earmark	n/a	n/a	2,528	960	2,500	5,988	1,198
Subtotal Federal	21,250	11,824	46,116	30,501	30,098	139,789	27,958
State	6,272	11,032	18,016	13,766	14,172	63,258	12,652
Subtotal Federal & State Roadway	27,522	22,856	64,132	44,267	44,270	203,047	40,609
B. Federal & State Transportation (non-roadway & non-transit)							
Transp. & Community & System Pres. Pilot Prgm. (TCSP)	n/a	550	n/a	n/a	n/a	550	110
STP Transportation Enhancements	1,127	2,077	1,595	4,432	3,319	12,550	2,510
Other State (WisDOA, WisDNR, UW, Ped/Bike, Rail)	1,273	1,397	2,803	28,057	10,613	44,143	8,829
Subtotal	2,400	4,024	4,398	32,489	13,932	57,243	11,449
Total Expenditures	29,922	26,880	68,530	76,756	58,202	260,290	52,058

Source: Transportation Improvement Program (TIP) for the Dane County Area (2002-2006)

TABLE 28
SUMMARY OF FEDERAL AND STATE SPENDING COSTS BY FUNDING SOURCE
NON-TRANSIT PROJECTS 2002-2006

	Funds Programmed ($000)						
	2002	2003	2004	2005	2006	5yr Total	Average/yr
State and Federal							
Highway Const., Maint., etc	22,532	17,866	58,812	38,947	38,043	176,200	35,240
STP Urban (Madison Urban Area)	4,990	4,990	5,320	5,320	6,227	26,847	5,369
Transp. & Community & System Pres. Pilot Prgm. (TCSP)	n/a	550	n/a	n/a	n/a	550	110
STP Transportation Enhancements	1,127	2,077	1,595	4,432	3,319	12,550	2,510
Other State	1,273	1,397	2,803	28,057	10,613	44,143	8,829
Total Expenditures	29,922	26,880	68,530	76,756	58,202	260,290	52,058

Source: Transportation Improvement Program (TIP) for the Dane County Area (2002-2006)

Major Metropolitan Area Projects

These projects are typically funded with federal STP-Urban funds and/or local funds. The STP-Urban funds have been identified above. Some major projects have also been totally done with local funds. An example of the combination of STP-Urban funds and local funds on major projects, as well as the level of funding, can be found in Table 24, on page 135, in the street and roadway recommendations section of the plan. The projects shown in the 2007-2010 column of Table 24 are projects already programmed in the Transportation Improvement Program (TIP) for the region.

Projected Transportation Expenses and Revenues

Assuming that the historical funding levels shown in Tables 26 through Table 29 will remain relatively constant over the next 24-year period to the year 2030, it is estimated that approximately $4,573,850,000 could potentially be available to finance projects. These projections are summarized in the bottom half of Table 30, on page 168. To estimate projected expenses over this period of time, levels of funding are based on the average annual amount of funding programmed in the MPO 2006-2010 TIP for each funding source. These projections are shown in the top half of Table 30. A constant dollar analysis was used.

Expenses Notes

- The state and federal highway cost estimates are based on the average annual amount of state and federal funding programmed for 2007-2010 in the 2006-2010 TIP multiplied by the number of years for each project period.
- TCSP funding has been relatively small in the Madison Metropolitan Area and future expenses are not expected.
- The Dane County & Communities expenses are based on the annual average expenditure trends from 2001-2004 in Table 26.
- Metro Transit capital costs are based on the average annual costs shown in Table 29 and multiplied by the number of years for each project period.
- Metro Transit operating expenses were increased 3% per year based on the average increases in the past 5 years.
- Metro Transit capital and operating costs do not include costs associated with a fixed guide way system and other associated bus service improvements being studied by Transport 2020. A new funding source and governance structure are being studied as part of that project.

Revenues Notes

- The state and federal highway revenue estimates are based upon spending levels from 2002 to 2006. Annual averages were estimated and then projected for each funding source for each future project period.
- TCSP funding has been relatively small in the Madison Metropolitan Area and future revenues are not expected.
- The Dane County & Communities revenues were assumed to continue into the future at the annual averages that were expended in the past. It is assumed that communities would adjust spending levels based on budget limits.
- Metro Transit revenues assume that state and federal governments will continue to fund Metro at current funding ratios and percentages. It is assumed that local funding levels will remain the same or increase over the planning period.

TABLE 29
METRO TRANSIT OPERATING REVENUES AND EXPENSES (2002-2006)

	Funds Programmed ($000)						
	2002	2003	2004	2005	2006	5yr Total	Average/yr
Expenditures							
Capital Costs	11,682	18,886	15,285	14,105	13,273	73,232	14,646
Operating Costs	32,697	32,804	34,278	35,272	36,038	171,090	34,218
Total Costs	44,380	51,691	49,563	49,377	49,311	244,322	48,864
Revenues							
FTA Section 5307 & 5309 Capital	9,346	15,109	12,228	11,284	10,755	58,721	11,744
State 85.20 Operating & JARC	14,867	15,167	15,726	15,167	15,525	76,452	15,290
Farebox & Other Revenue	8,737	8,912	9,716	10,511	10,848	48,724	9,745
Local Funds – Madison	9,200	10,219	9,498	10,058	9,792	48,766	9,753
Other local funds	2,231	2,284	2,394	2,357	2,392	11,658	2,332
Total Revenues	44,380	51,691	49,563	49,377	49,311	244,322	48,864

Source: Transportation Improvement Program (TIP) for the Dane County Area (2002-2006)

The results of the expense and revenue projection analysis suggest that potential revenues will slightly exceed expenses during the 24-year period, but these projections could be affected by many factors.

Recommended Plan Projects

Table 24, on page 135, identifies the list of potential arterial street and roadway improvements from 2007-2030 recommended in the plan. It includes capacity improvement projects and system preservation projects. Section 1 and Section 3 of the table identifies the potential capacity improvements and system preservation projects that are already programmed in the adopted 2006-2010 TIP for the region. Sources of funding and funding levels are also identified.

It is assumed that the annual average level of funding from each funding source in the 2007-2010 time period will continue over the planning horizon to be applied against projects identified in the 2011-2020 and 2021-2030 time periods shown in Sections 2 and 4 of Table 24.

Capacity Improvements

Local funds programmed for roadway capacity improvements in the 2007-2010 time period are just under $30 million or just under $7.5 million per year. This level of funding from local sources, if continued, is more than sufficient for projects identified in the 2011-2020 time period at $5.9 million per year or approximately $59 million over that decade. Similarly, it is also sufficient to cover projects identified in the 2021-2030 time period at $4.2 million per year or approximately $42.5 million over that decade.

STP Urban funds for capacity improvements are currently programmed in the 2007-2010 time period at just under $1.7 million or just under $0.5 million per year. The use of STP Urban funding for capacity improvements in the next two decades have not been specifically identified, but are typically used with local funds in the paragraph above which appear sufficient to cover the projects identified in the recommended plan.

Federal and State funds for capacity improvements are currently programmed in the 2007-2010 time period at $25 million or just under $6.3 million per year. No capacity improvements have been identified over the next two time periods due to several studies that are underway. Recommended improvements and sources of funding are unknown at this time. The recommended plan calls for the completion of studies of the Beltline and Beltline interchanges (Mineral Point Road, Verona Road, Fish Hatchery Road, Park Street/USH 14, and Stoughton Road), Interstate 39/90 and its interchanges at STH 19 and USH 12/18. It also recommends the completion of EISs for USH 51 (Interstate I39/90 to Terminal Drive), USH 51 (McFarland to Stoughton), and the Verona Road/West Beltline Corridor. The types of improvements, timing of improvements, and sources of funding are dependent on the outcomes of these studies. New studies are programmed at $10.3 million.

TABLE 30
PROJECTED EXPENSES AND REVENUES OF TRANSPORTATION PROJECTS
MADISON METROPOLITAN PLANNING AREA (2007-2030)

Projected Expenses ($000s)	2007-2010	2011-2020	2021-2030	Planning Period Total
State and Federal				
Highway Const., Maint., etc.	99,220	248,050	248,050	595,320
STP Urban (Madison Urban Area)	23,332	58,330	58,330	139,992
Transp. & Community & System Pres. Pilot Prgm. (TCSP)	-	-	-	-
STP Transportation Enhancements	3,456	8,640	8,640	20,736
Other State	28,724	71,810	71,810	172,344
Subtotal	154,732	386,830	386,830	928,392
Dane County & Communities				
Street Operations and Maintenance	153,626	384,064	384,064	921,754
Street Construction	117,784	294,459	294,459	706,702
Street-Related Facilities	17,777	44,442	44,442	106,662
Subtotal	289,186	722,966	722,966	1,735,118
Metro Transit				
Capital Expenses	58,584	146,460	146,460	351,504
Operating Expenses	150,764	464,930	624,782	1,240,476
Subtotal	209,348	611,390	771,242	1,591,980
Total Projected Expenses	653,266	1,721,186	1,881,038	**4,255,490**
Projected Revenues ($000s)				
State and Federal				
Highway Const., Maint., etc.	140,960	352,400	352,400	845,760
STP Urban (Madison Urban Area)	21,478	53,694	53,694	128,866
Transp. & Community & System Pres. Pilot Prgm. (TCSP)	-	-	-	-
STP Transportation Enhancements	10,040	25,100	25,100	60,240
Other State	35,314	88,286	88,286	211,886
Subtotal	207,792	519,480	519,480	1,246,752
Dane County & Communities				
Street Operations and Maintenance	153,626	384,064	384,064	921,754
Street Construction	117,784	294,459	294,459	706,702
Street-Related Facilities	17,777	44,442	44,442	106,662
Subtotal	289,186	722,966	722,966	1,735,118
Metro Transit				
Capital Expenses	58,584	146,460	146,460	351,504
Operating Expenses	150,764	464,930	624,782	1,240,476
Subtotal	209,348	611,390	771,242	1,591,980
Total Projected Revenues	706,326	1,853,836	2,013,688	**4,573,850**

Bridges are currently programmed with Federal and State funds at just over $5 million or just under $1.3 million per year in the 2007-2010 time period. As in the case above, capacity improvements for bridges in the next two time periods are unknown at this time.

New interchanges that are not part of the studies identified above are currently programmed with local funds at $6.0 million in the 2007-2010 time period. One interchange at $16.0 million is programmed in the 2011-2020 time period with local funds and two interchanges totaling $12.0 million are planned in the 2021-2030 time period with local funds.

System Preservation

Local funds programmed for roadway preservation improvements in the 2007-2010 time period are $20.0 million or approximately $5.0 million per year. This level of funding from local sources, if continued, is more than sufficient for known projects identified in the 2011-2020 time period at approximately $2.1 million per year or approximately $20.7 million over that decade. System preservation projects have not been identified in the 2021-2030 time period.

STP Urban funds for roadway preservation improvements are currently programmed in the 2007-2010 time period at $23.2 million or $5.8 million per year. This level of funding, if continued, is more than sufficient for projects identified in the 2011-2020 time period at $0.6 million per year or approximately $6.1 million over that decade. The use of STP Urban funding for preservation improvements in the last time period is unknown at this time.

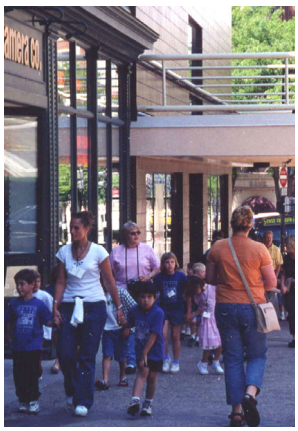
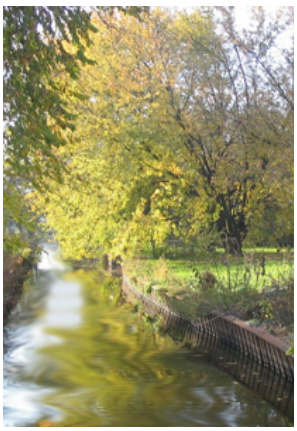
Federal and State funds for roadway preservation improvements are currently programmed in the 2007-2010 time period at $21.6 million or just over $5.4 million per year. This level of funding, if continued, is more than sufficient for known projects identified in the 2011-2020 time period at $1.2 million per year or approximately $12.0 million over that decade. The use of federal and state funding for preservation improvements in the last time period is unknown at this time. While Federal Earmarks have been identified in the 2007-2010 time period, earmarks in the next two time periods are unknown. Bridges are currently programmed with Federal and State funds at just over $4.2 million or just over $1.0 million per year in the 2007-2010 time period. System preservation improvements for bridges in the next two time periods are unknown at this time.

System Preservation Beyond the Recommended Plan

An emphasis area of SAFETEA-LU is for transportation plans to try to identify the costs of the projects for maintenance and preservation of the existing transportation system. This is a new area for the Madison Area MPO and significant efforts have been put forth to get the necessary data to do the analysis with limited success.

For the first time, MPO staff was able to create a map (Figure 17 on page 47) showing the pavement condition of the local and state arterial and collector roadways for the year 2005. The difficulty in producing this map is that the state and local units of government use different pavement evaluation systems (see Roadway Pavement and Bridge Conditions section of the plan). In addition, gaps exist in data provided by local governments to the Wisconsin Information System for Local Roads (WISLR). However, MPO staff interpolated the data to the extent possible to produce Figure 17. From this map, it was determined that the overall pavement condition of state roadways is better than that of county and local arterial/collector roadways. Around 75% of state roadways are in the best pavement condition category compared to 36% of county and 44% of municipal arterial/collector roadways.

To do a system preservation analysis of the roadways in the three pavement condition categories shown in Figure 17 on roadways other than the state highway system requires tying this information to the Local Street and Roadway Expenses (Operations and Maintenance and Construction) shown in Table 26. It is unknown, except for the City of Madison, the percent of these funds that are being spent on local roads versus collectors or arterials. Given this difficulty, the MPO will continue to work with WisDOT, FHWA, and local units of government to see if this gap can be bridged.

Environmental Justice Analysis

Environmental Justice Analysis

As part of the Madison Area MPO's continuing efforts to comply with Title VI and address environmental justice, both a qualitative and quantitative analysis was conducted to evaluate the impacts of the Regional Transportation Plan (RTP) 2030 on minority populations, low-income households, and those households without access to an automobile. Efforts were also made throughout the planning process to ensure that minority and low-income populations were provided with an opportunity to fully participate in planning and decision making processes. (See discussion of public involvement efforts on pages 8-9).

Title VI of the 1964 Civil Rights Act (42 U.S.C. 2000d-1) states that "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." To further amplify Title VI, President Clinton issued Executive Order 12898 in 1994, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. The purpose of the order is to make achieving environmental justice part of each Federal agency's mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of government programs, policies, and investments, such as transportation facilities, on minority and low-income populations. The goal is to ensure that the benefits and burdens of government actions and investments are fairly distributed, and that minority and low-income populations are not disproportionately affected in an adverse way. In 1997, the U.S. Department of Transportation (USDOT) issued an order to summarize and expand upon the requirements of Executive Order 12898 on Environmental Justice. The Order generally describes the process for incorporating environmental justice principles into all DOT existing programs, policies, and activities.

Title VI, Executive Order 12898, the USDOT order, and other USDOT guidance do not contain specific requirements in terms of evaluating the impacts of transportation plans and programs on environmental justice populations. For this plan, a qualitative analysis was conducted of the impacts of proposed transportation projects on areas with high concentrations of these populations. In addition, a quantitative analysis was done using the regional travel model on the impacts of the recommended transit and roadway improvements on the accessibility to major employment, retail, educational, and recreation centers for these areas. It is anticipated that in the future, these analyses will be refined and improved.

Environmental Justice Population and Areas of Concentration Within the Madison MPO Planning Area

The minority population within the Madison Area MPO Planning Area is just under 45,000 or around 13% of the total population of 350,250. African Americans account for around 5% of this total and Asians account for another 4%. Other racial categories covered include American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and multi-racial persons. The Hispanic or Latino population is just under 14,000 or around 4% of the entire planning area population. Table 31, on the next page, lists the number and percentage of minority and Hispanic populations in "selected" cities and villages within the planning area and in the Town of Madison. The table also lists autoless households and low-income population in those communities. The "low-income" population in the table includes persons aged 5 and over for whom poverty has been determined and is defined as those individuals and families with incomes less than 150% of the federal poverty level. Around 7.5% of the households in these communities are autoless and a little less than 18% are low-income. The larger cities and Town of Madison all have significant minority, Hispanic, and/or low-income populations.

Minority and low-income populations are fairly dispersed throughout the Madison area. However, there is a concentration of these environmental justice (EJ) populations in the south Madison area along the Beltline corridor. These areas include: Allied-Dunn's Marsh neighborhood east of Verona Road; Burr Oaks and Arbor Hills neighborhoods in south central Madison; the areas west of Fish Hatchery Road in north Fitchburg; Southdale area in the Town of Madison west of Rimrock Road; Moorland-Rimrock neighborhood in the City of Madison; and the Broadway-Lakepoint neighborhood in Madison. There is also a concentration of low-income families/individuals and households with no vehicle available in the Park Street and downtown/UW-Madison campus areas, many of whom are students. In addition to the south side and downtown area, Madison's north side is the area with probably the next heaviest concentration of EJ populations.

Figures 45 through 48 on pages 176 to 179 show the areas with concentrations of EJ populations in relation to planned transportation projects. Areas highlighted as having concentrations of minority populations in Figures 45 and 47 include Census Block Groups with more than 36% minority population and a minimum of 50 persons. Areas highlighted in

Figures 46 and 48 include traffic analysis zones (which are larger than Census Block Groups) with over 170 families or individuals with incomes less than 150% of the federal poverty level and/or over 100 households with no motor vehicle available.

TABLE 31
ENVIRONMENTAL JUSTICE POPULATIONS IN SELECTED MUNICIPALITIES[1] WITHIN THE MADISON METROPOLITAN PLANNING AREA

Municipality	Minority[2] Population		Hispanic[3] Population		Autoless Households		Low Income Population[4]	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Madison, City	33,365	16.0	8,512	4.1	10,483	11.8	40,545	21.9
Cottage Grove, Village	174	4.3	73	1.8	20	1.4	260	7.4
Fitchburg, City	3,648	17.9	1,327	6.5	433	5.2	2,145	11.7
Maple Bluff, Village	39	2.9	9	0.7	7	1.3	60	4.7
McFarland, Village	179	2.8	73	1.1	66	2.7	295	5.0
Middleton, City	1,249	7.9	444	2.8	396	5.6	1,195	8.2
Monona, City	505	6.3	256	3.2	287	7.6	765	10.0
Shorewood Hills, Village	139	8.0	55	3.2	8	1.2	65	4.2
Stoughton, City	513	3.3	153	1.2	221	4.6	1,125	10.2
Sun Prairie, City	1,492	7.3	555	2.7	331	4.2	1,665	9.0
Verona, City	179	2.5	50	0.7	139	5.4	420	6.5
Waunakee, Village	174	1.9	86	1.0	181	5.7	335	4.1
Madison, Town	2,661	38.0	1,455	20.8	390	12.1	2,195	33.4
Total	**44,217**	**19.2**	**13,048**	**5.7**	**12,962**	**7.5**	**51,070**	**17.7**

[1]Includes all cities and villages and the Town of Madison.
[2]Includes Black/African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, other race, or two or more races.
[3]Includes Hispanic or Latino Population of any race. This includes Mexican, Puerto Rican, Cuban, or Other.
[4]Includes persons aged 5 and over for whom poverty status has been determined. Low-income is defined as less than 150% of the federal poverty level.

Means of Transportation and Travel Time to Work for Environmental Justice Populations

A higher percentage of minority, Hispanic, and low-income persons residing in the Madison Urban Area use alternative means of transportation to work than white, non-Hispanic persons and those that are not low-income. According to 2000 Census data, around 74% of white, non-Hispanic persons drove alone to work compared to only 56% of minority and 59% of Hispanic persons. Around 39% of persons with incomes below the federal poverty drove alone, and 55% of those with incomes less than 150% of the poverty level drove alone. Around 12.7% of minorities and 6.6% of Hispanic persons took the bus to work compared to 4.2% of the white, non-Hispanic population. For minority persons, Asians had the highest percentage of alternative transportation use with 15.5% carpooling, 15.5% using the bus, 16% walking, bicycling, or using other means. Around 51% drove alone. Around 34.8% of persons with incomes below the federal poverty level walked or bicycled to work and another 13% took the bus.

The 2000 Census data also shows that minority and Hispanic persons had somewhat longer travel times to work than white, non-Hispanic persons. Around 19.5% of minority persons and 18.2% of Hispanic persons had travel times of 30 minutes or greater compared to 15.8% of white, non-Hispanic persons. Around 55.5% of minorities had travel times of less than 20 minutes compared to 56.8 of white, non-Hispanic persons. In contrast to minority persons as a whole, Asians actually had somewhat shorter travel times compared to white, non-Hispanic persons. Around 61.2% of Asians had a travel time less than 20 minutes. The percentage with the longest travel times (30+ minutes) was about the same.

The higher travel times for minorities overall can perhaps be partially attributed to their far greater use of car/vanpools and the bus. The mean travel time for those using 3+ person carpools was 20.6 minutes and the mean time for those using the bus was 25.5 minutes compared to 15.6 minutes for those driving alone. Because Asians' travel times are shorter even though they have the highest use of car/vanpools and the bus, a higher percentage must live closer to where they work. This is consistent with the fact Asians have the highest percentage use of walking and bicycling for which the mean travel time is the shortest (13.8 minutes).

Transportation Project Analysis

A qualitative transportation project analysis was conducted comparing the location of projects in relation to areas with concentrations of EJ populations. Figures 45 through 48, on the following pages, overlay the recommended major transportation improvements (primarily capacity expansion) and studies and the roadway preservation and high priority off-street bicycle facility projects on maps highlighting the areas with high concentrations of minority populations and high concentrations of low-income (less than 150% of the poverty level) families/individuals and/or households with no vehicle available. Roadway capacity expansion projects improve auto mobility for persons residing in or traveling to areas in the general vicinity of the roadway, but can have negative impacts on persons residing adjacent to or in close proximity to the roadway. Roadway preservation projects are generally considered to have a positive impact on the adjacent community, particularly when they include pedestrian/bicycle facilities and safety and/or streetscape improvements. Some negative impacts may occur during construction of the project (e.g., noise, dust, etc.), however the potential benefits of the project (e.g., improved safety and traffic flow, smoother pavement, improved pedestrian and bicycle facilities, streetscape amenities) are assumed to outweigh the negative impacts. Off-street bicycle facilities also have a positive impact on the adjacent community by improving non-motorized accessibility.

All of the recommended local arterial capacity expansion projects are located on the urban periphery, primarily the rapidly developing East and West sides of the greater Madison area. Major capacity expansion projects (i.e., addition of general purpose travel lanes) on arterials inside the Beltline and Interstate system are typically not feasible due to right-of-way limitations and impacts to adjacent development and the neighborhoods. Other capacity expansion projects include the Interstate system projects, which are addressing inter-regional mobility needs, and USHs 14 and 51 (north of STH 19). Figures 45 and 46, on pages 176-177, show that none of these projects is located in an EJ area.

The only other location where a major capacity expansion is being considered is Verona Road (USH 18/151) and the West Beltline (USH 12/14). The Verona Road/West Beltline project is currently under study and a recommendation on the type of improvements is pending completion of a Final Environmental Impact Statement (FEIS) and identification of funding. The long-term improvements being considered would have both positive and negative impacts on the Allied-Dunn's Marsh neighborhood. As part of development of the Draft EIS, which was completed in 2004, an extensive EJ analysis was conducted and measures identified to minimize and mitigate the adverse impacts, including extension of Raymond Road across Verona Road into the neighborhood (under the Freeway alternative) and adding and improving pedestrian and bicycle accommodations to improve neighborhood access. WisDOT also funded a physical improvement plan for the neighborhood to plan for residential and commercial redevelopment and other public infrastructure (e.g., traffic calming, lighting). As this study continues and short-term and long-term improvements are implemented, WisDOT and the City of Madison will continue efforts to minimize and mitigate impacts on the neighborhood and utilize opportunities to improve access for the neighborhood and stimulate development of affordable housing and neighborhood-oriented businesses.

The plan also recommends continued study of TSM/safety improvements to the Beltline and in particular the interchanges. There are high concentrations of EJ populations in close proximity to the Fish Hatchery Road and Park Street interchanges and any redesign of those facilities could potentially impact these areas. An EJ impact evaluation should be done as part of the study and measures identified to reduce any impacts and provide treatments that increase the safety and accessibility of these interchange areas for all modes of transportation and improve overall aesthetics (e.g., landscaping). Potential short- and long-term improvements are also being studied for the Stoughton Road (USH 51) corridor. There are two small areas with minority populations in the corridor, including near the East Washington Avenue intersection. It is unknown at this time what the recommended improvement projects will be, however impacts to these areas should be considered as part of the study and efforts made to make the corridor as safe and accessible as possible for people using all modes of transportation.

Figures 47 and 48, on pages 178-179, show the location of programmed and other planned roadway preservation projects in relation to areas with concentrations of EJ populations. Many of these projects are located in and will benefit EJ areas. These include the following:

- State Street reconstruction;
- East Washington Avenue reconstruction;
- University Avenue reconstruction and pavement replacement projects;
- Monona Drive reconstruction;

FIGURE 45

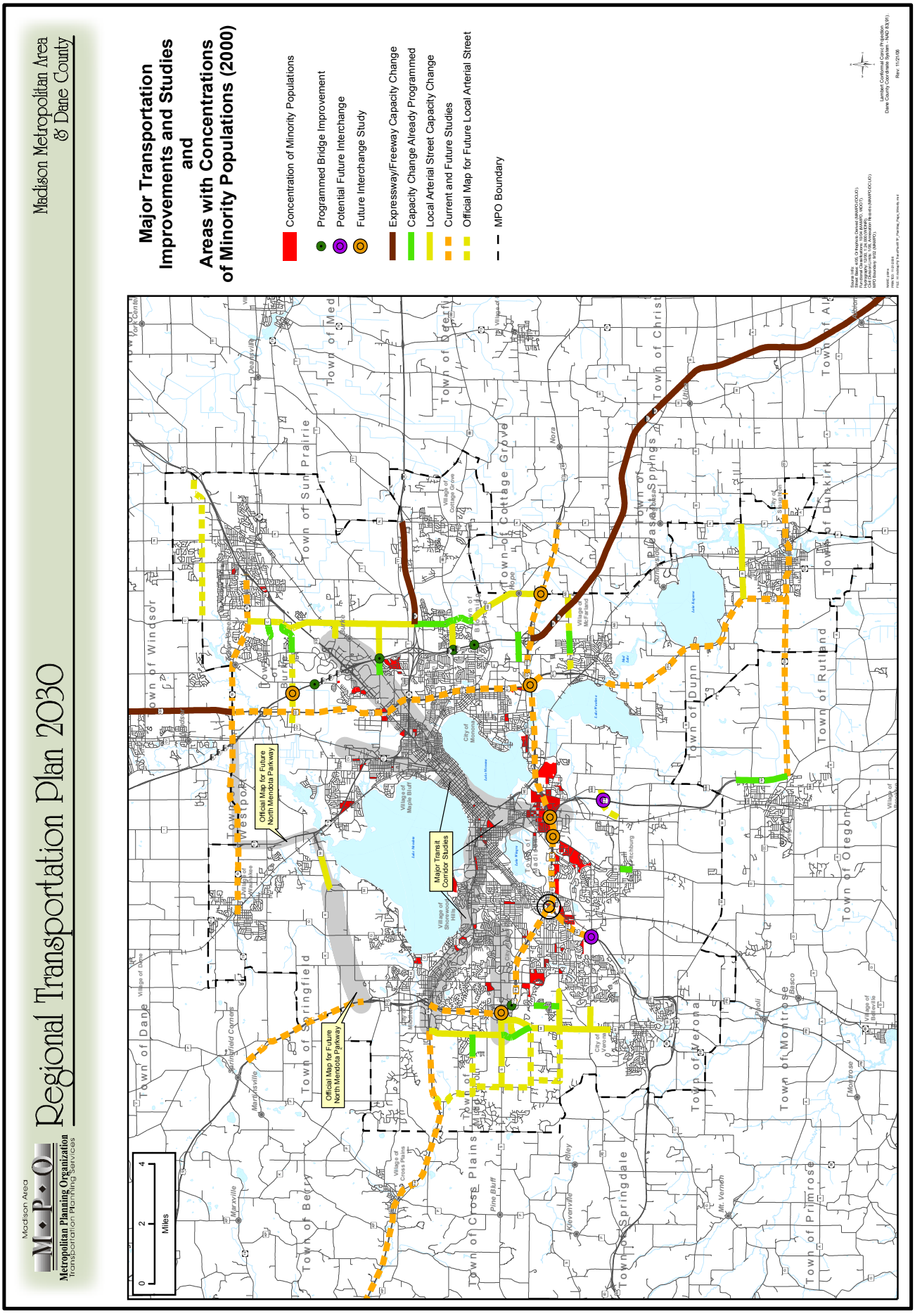

Madison Area
M•P•O
Metropolitan Planning Organization
Transportation Planning Services
Regional Transportation Plan 2030
Madison Metropolitan Area
& Dane County
Major Transportation Improvements and Studies and Areas with Concentrations of Minority Populations (2000)
Concentration of Minority Populations
Programmed Bridge Improvement
Potential Future Interchange
Future Interchange Study
Expressway/Freeway Capacity Change
Capacity Change Already Programmed
Local Arterial Street Capacity Change
Current and Future Studies
Official Map for Future Local Arterial Street
MPO Boundary
Official Map for Future North Mendota Parkway
Official Map for Future North Mendota Parkway
Major Transit Corridor Studies
0
2
4
Miles

FIGURE 46

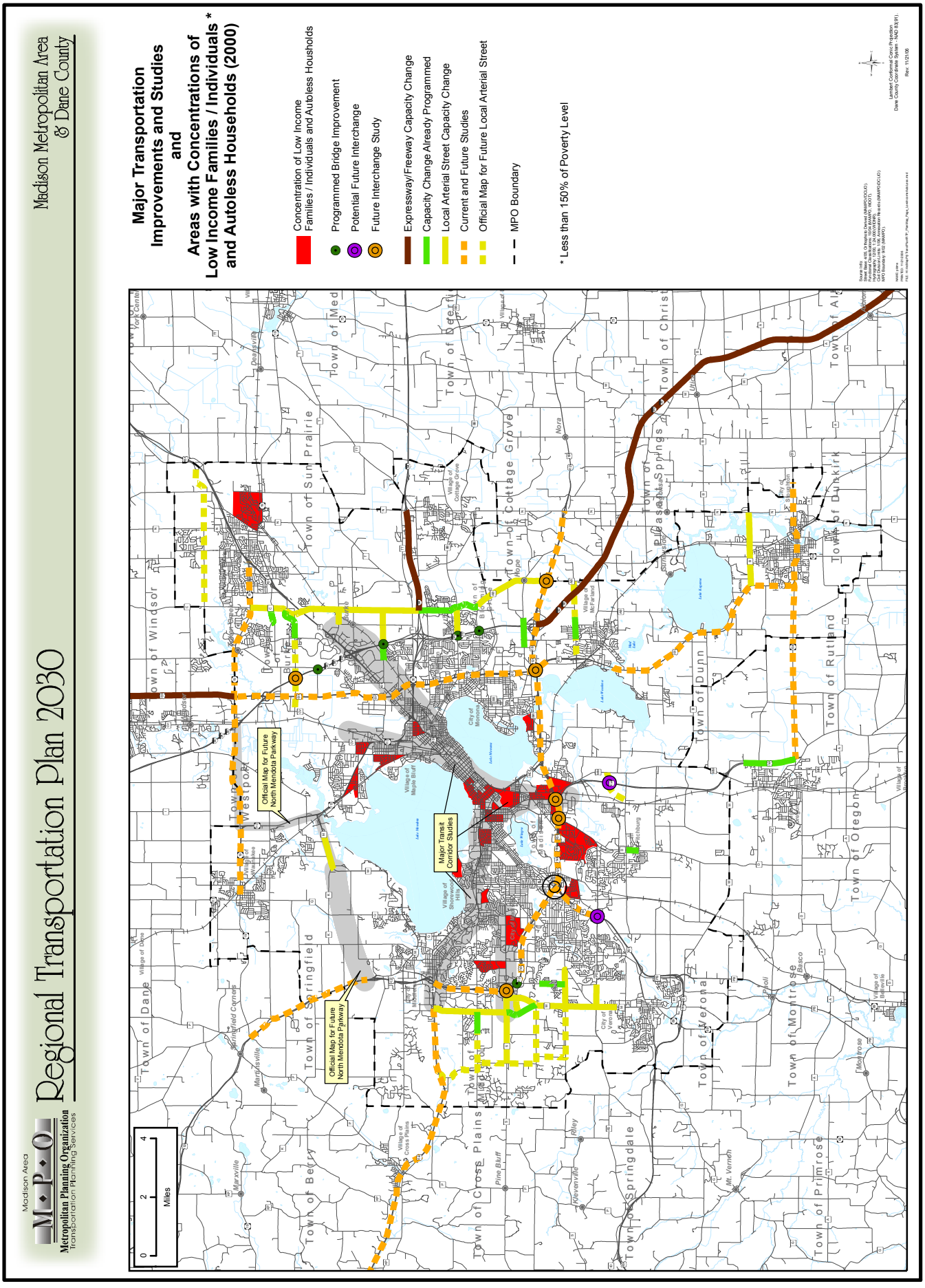

Major Transportation Improvements and Studies and Areas with Concentrations of Low Income Families / Individuals * and Autoless Households (2000)
Concentration of Low Income Families / Individuals and Autoless Households
Programmed Bridge Improvement
Potential Future Interchange
Future Interchange Study
Expressway/Freeway Capacity Change
Capacity Change Already Programmed
Local Arterial Street Capacity Change
Current and Future Studies
Official Map for Future Local Arterial Street
MPO Boundary
* Less than 150% of Poverty Level
Official Map for Future North Mendota Parkway
Official Map for Future North Mendota Parkway
Major Transit Corridor Studies
Miles
0
2
4

FIGURE 47

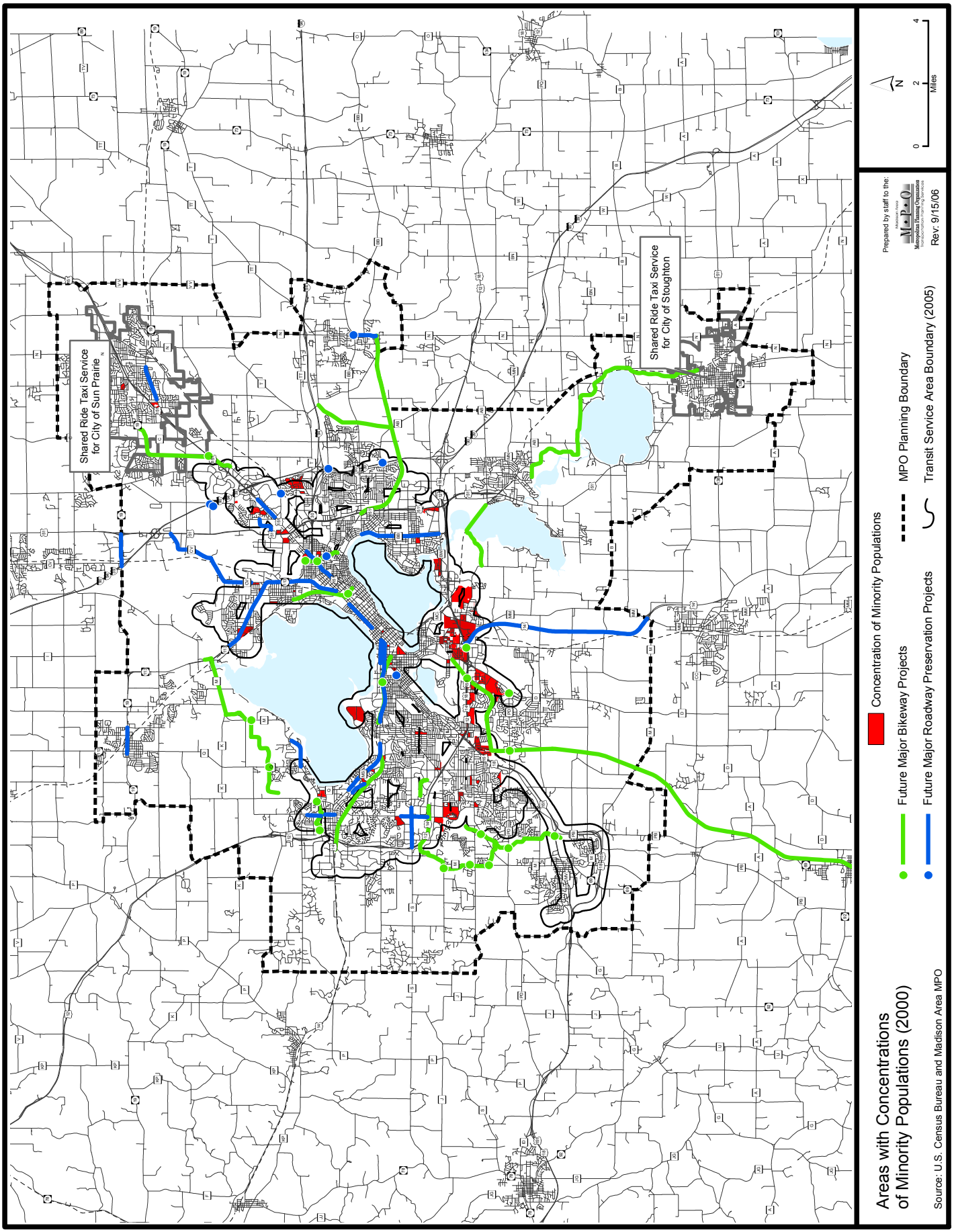
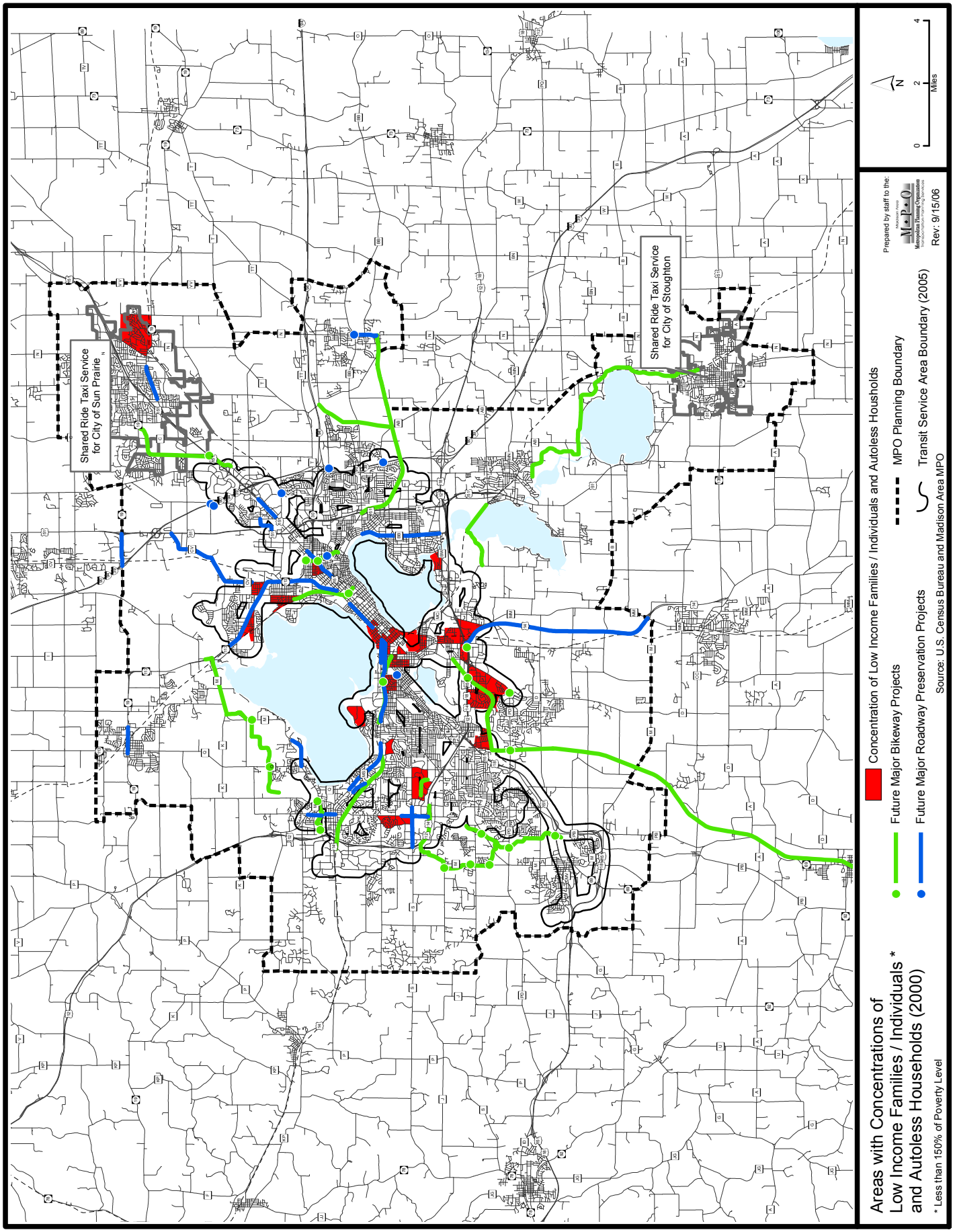

Shared Ride Taxi Service for City of Sun Prairie
Shared Ride Taxi Service for City of Stoughton
N
0
2
4
Miles
Areas with Concentrations of Minority Populations (2000)
Concentration of Minority Populations
Future Major Bikeway Projects
Future Major Roadway Preservation Projects
MPO Planning Boundary
Transit Service Area Boundary (2005)
Source: U.S. Census Bureau and Madison Area MPO
Prepared by staff to the:
MPO
Madison Area Metropolitan Planning Organization
Rev: 9/15/06

FIGURE 48


Shared Ride Taxi Service for City of Sun Prairie
Shared Ride Taxi Service for City of Stoughton
Areas with Concentrations of Low Income Families / Individuals * and Autoless Households (2000)
* Less than 150% of Poverty Level
Concentration of Low Income Families / Individuals and Autoless Housholds
Future Major Bikeway Projects
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MPO Planning Boundary
Transit Service Area Boundary (2005)
Source: U.S. Census Bureau and Madison Area MPO
Prepared by staff to the:
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Rev: 9/15/06
N
0
2
4
Miles

- West Main Street in the City of Sun Prairie; and
- STH 113 (Packers Avenue/Northport Drive) resurfacing.

Most of these projects incorporate significant pedestrian/bicycle, safety, and streetscape improvements. For those that may not, such as the STH 113 resurfacing project, it is recommended that such improvements (e.g., sidewalk repair, pedestrian crossings) be incorporated as part of the project to the extent feasible.

Figures 47 and 48 also show the programmed and planned high priority off-street bicycle/pedestrian projects that are part of the recommended regional bicycle way system plan. Many of these projects are located in or near EJ areas and will greatly improve non-motorized accessibility and strengthen the social fabric of these neighborhoods. These projects include:

- *Starkweather Creek (W. Branch) path and overpasses* of East Washington Avenue and Aberg Avenue, which will provide safe, convenient crossings over these major roadways and connect the Worthington Park and Truax neighborhoods to shopping, recreational, and other areas and the rest of the Madison area bicycle network.

- *Sherman Flyer path*, which will provide North side neighborhoods, including Vera Court and Berkly Oaks, with a safe, convenient route to schools, parks, potential employment areas, and into downtown. Sherman Avenue currently presents a major barrier to bicycling on the North side and there is no alternative route.

- *Beltline bicycle/pedestrian overpass at Perry Street*, which will connect the Burr Oaks neighborhood to the employment area south of the Beltline.

- *Cannonball Trail and Beltline overpass*, which will provide the Arbor Hills and north Fitchburg neighborhoods along Fish Hatchery Road with a safe, direct route into downtown Madison and connect them to the commercial area along the Beltline, Leopold School, the Capital City Trail, and other destinations.

- *Ice Age Junction Trail*, which will provide the Park Ridge and other southwest neighborhoods with convenient access to existing and planned commercial areas along McKee Road, parks, and the Military Ridge Trail.

- *Junction Ridge overpass of Beltline*, which will connect the Wexford Ridge neighborhood with commercial and employment areas west of the Beltline.

- *Campus Drive/University Avenue Rail Corridor path projects*, which will provide a direct, continuous route into downtown and destinations along University Avenue for Madison neighborhoods in the corridor and Middleton.

- *USH 151 Corridor path/underpass*, which will provide Sun Prairie residents with safe, direct access to the East Towne area and into Madison.

In conclusion, EJ areas are only negatively impacted by one potential roadway capacity expansion project, the Verona Road/West Beltline project, which is not a part of the fiscally constrained plan at this point in time. The impacts of the project are being evaluated as part of the EIS process and strategies have been proposed to minimize and mitigate these impacts. Neighborhood access would actually be improved under the freeway alternative being considered. In addition, a relatively high proportion of the roadway preservation and off-street bicycle projects, which benefit neighborhoods in these corridors, are located in or near identified EJ areas.

Transit Service Analysis

Figures 45 through 48 show the 2005 Metro Transit fixed-route system service area boundary and the communities (Cities of Sun Prairie and Stoughton) with shared ride taxi systems. One can see from these figures that these transit service areas encompass all of the EJ areas. The level of transit service to these areas is good with multiple routes serving most areas, reflecting the different functional systems operated by Metro (core, commuter, connector, peripheral, circulator routes). The level of service is particularly good for EJ areas considering that most are located towards the edges of Metro's ser-

vice area boundary outside the transfer points. Metro's transit system is set up to provide the highest levels of service in the arterial corridors leading to the downtown/UW-Madison campus area where multiple routes converge providing higher effective bus frequencies.

While transit service to two of the major employment/activity centers (American Center, Fitchburg Center) is limited, the service to most of them is excellent with midday as well as peak service. Transit service to the intercity bus station is excellent and service to the airport is good having been improved in 2004. There is no weekend service to the airport, but private taxi service (including less expensive shared-ride service) is available 24 hours a day.

As part of its Title VI compliance monitoring, Metro Transit updated its Title VI Plan in 2004 to provide detailed comparative information about transit services being provided in minority versus non-minority neighborhoods.[17] The analysis conducted for the Title VI Plan looked at the level of service (peak vehicle loads, average age of vehicles, headways, amenities) for identified minority neighborhoods and compared the quality of service (travel time to downtown, regional malls, MATC) for minority vs. representative non-minority neighborhoods.

According to the analysis, 36 of 49 (73%) of Metro routes had at least 1/3 of its mileage within a minority area in 2004. The headways for the minority areas meet Metro's standards for the different functional route systems with a few exceptions for the south central and northwest areas where service levels are determined by contracting jurisdictions.[18] The minority areas compared favorably with non-minority areas in the other service level categories. The travel times from minority areas to the major transit destinations were comparable overall to those from representative non-minority areas. Travel times to the regional malls were longer, but times to MATC were shorter. The longest travel times to the malls were for the South side where multiple jurisdictions fragment Metro's routing and impact service levels.[19]

Metro also looked at work trip travel patterns, using Census Transportation Planning Package (CTPP) data provided by Madison Area MPO staff. The analysis found that the highest percentage of both minority and representative non-minority area commuters worked in the downtown, UW campus, and West Towne areas, but that the work trips were very dispersed. Thirteen of the fourteen major employment destinations were served by Metro.

Metro implemented major service improvements for the West and South sides of the Madison area in August 2006. These improvements implemented many of the recommendations in the *2004-2008 Transit Development Program for the Madison Urban Area*. Many of these service improvements benefit EJ areas. These include:

- Addition of new connecting service on Route 16 between the South and East Transfer Points, which provides South side neighborhoods with much faster service to LaFollette High School, East Towne, southeast industrial area, and other destinations.

- Faster, more frequent peak hour service on Route 47 serving the Arbor Hills and Fish Hatchery corridor neighborhoods.

- New direct connection from the South Transfer Point into the UW campus via Park and Mills Streets on new Route 44.

- Faster, more direct service between the South and East Transfer Points through the Isthmus on Route 5 serving the Park Street corridor. Routes 5 and 44 together provide a higher frequency of service in the Bram/Beld Street area.

- Higher level of service on Sheboygan Avenue during peak hours. This area has a high concentration of low-income and autoless households and is one of the largest generators of transit trips.

- Faster, more direct service to downtown on Route 14, serving the Wexford Ridge neighborhood.

[17] See Title VI Compliance Monitoring: Supplement to Title VI Information for the Madison Urbanized Areas – 2002 Update, prepared by the Madison Metro Transit System (December 6, 2004).
[18] Service improvements implemented in August 2006 addressed most or all of the deficiencies in these areas.
[19] Service improvements implemented in August 2006 added a connector route between the South and East Transfer Points substantially reducing the travel time from South side neighborhoods to the East Towne Mall.

- Expansion of service between Middleton and Madison and introduction of new transfer opportunities for intra-Middleton travel.

Some trade-offs had to be made with the August 2006 service improvements as they resulted in an actual net reduction in the overall number of service hours due to budgetary constraints. For example, convenient service from the Regent Street/West Washington Avenue area to Meriter Hospital was lost with the elimination of Route 8. However, the redistribution of service hours significantly improved overall service and benefited many EJ areas in particular.

The Regional Transportation Plan (RTP) recommends continued efforts to improve local bus service, including addition of express routes from peripheral neighborhoods and outlying communities. Because many of the EJ areas are located on the periphery of the service area, addition of express service would be particularly beneficial for these areas. It would also make trips from one side of the urban area to the other (e.g., South/Southwest side to Dane County Job Center on the North side) much more convenient. The plan also recommends working to reach regional agreement on and implement the service and finance/governance recommendations of the Transport 2020 (East-West Transit Corridor) Study. This study is looking at implementing a long-standing RTP recommendation to develop high capacity fixed-guideway transit service in the corridor with complementary express and local bus service. As illustrated by Figure 21 on page 62, this corridor accounts for a very high percentage of all transit riders. While there are not many EJ areas within the fixed-guideway corridor, residents of these areas would still benefit from the rail and bus service, which would provide shorter travel times to many key destinations. See the accessibility analysis below.

Accessibility Analysis

Accessibility is another indication of how well the current transportation system serves EJ areas and the impact that the RTP 2030 projects will have on these areas. How accessible are major employment/activity centers by auto and transit? How will EJ areas be affected by implementation of projects recommended in this plan that increase auto or transit capacity? Will accessibility be disproportionately gained in one area over another?

Using the Madison Area MPO's regional travel model, a travel time analysis was conducted for seven different EJ areas. The analysis looked at current auto and transit travel times from the EJ areas to selected major employment, shopping, educational, medical, and recreational centers, and then looked at the change in accessibility (i.e., auto and transit travel times) after implementation of the capacity expansion roadway projects in the recommended, fiscally constrained plan and the recommended transit system improvements. For the analysis of current transit travel times, travel time data was obtained from Metro Transit's Trip Planner software rather than the regional travel model for two reasons. First, this data reflects the most current transit system, including service changes implemented in August 2006. Secondly, work is still being done to refine the calibration of the mode choice/transit portion of the model as part of the Transport 2020 Study. The model is still useful for comparing travel times before and after implementation of recommended regional transit improvements, but at this point cannot accurately replicate "real world" transit travel times between all of the origin-destination pairs.

The transit system improvements assumed for the analysis of the recommended plan included a hybrid rail system in the East-West Transit Corridor—one of the alternatives being considered as part of the Transport 2020 Study—with complementary express bus service. Some local bus service was also added. This was primarily new service to developing areas, but also included new South to East Transfer Point connecting service that was implemented in August 2006.

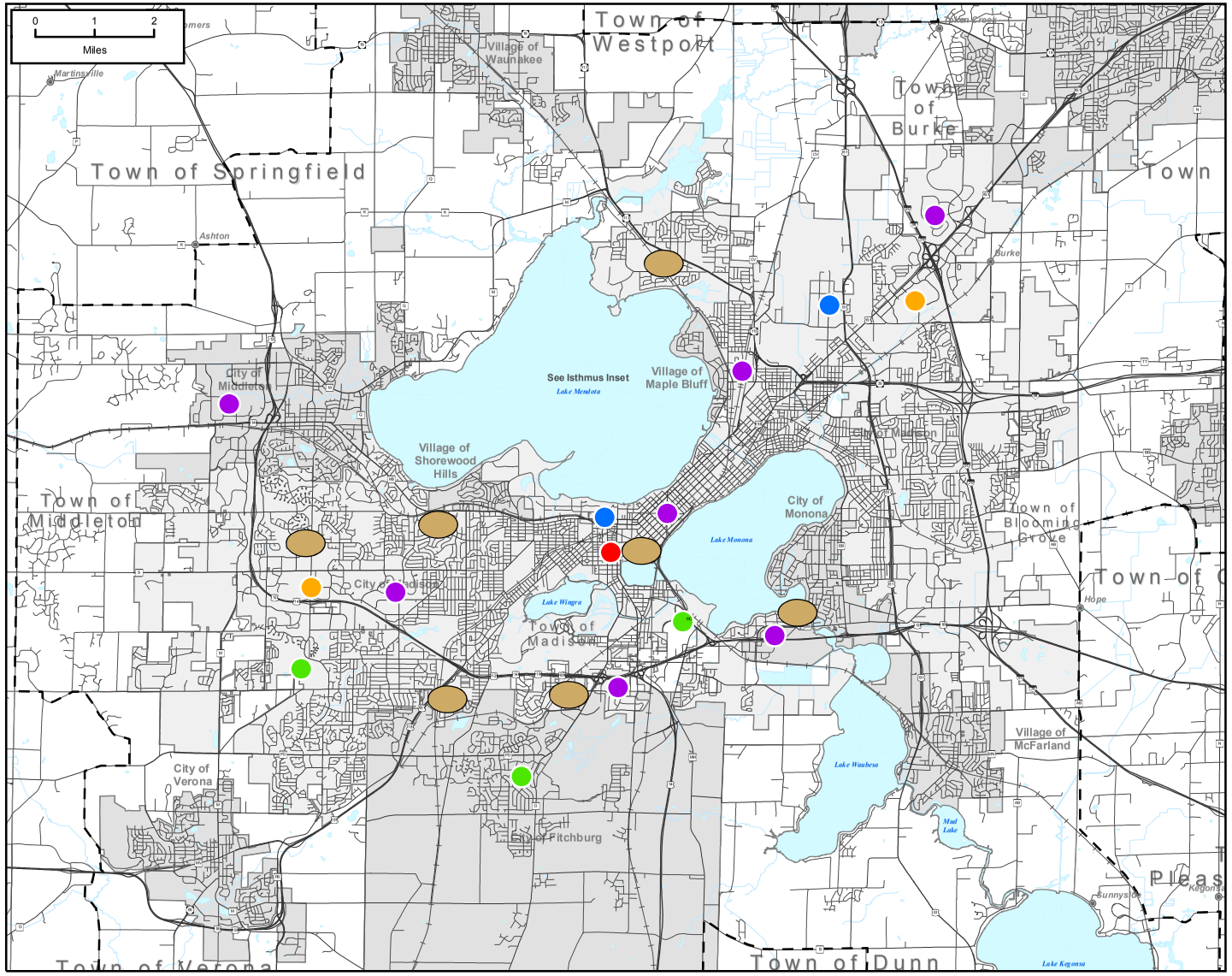
The EJ areas and employment and other centers were selected for the analysis based upon the number of trips from/to the areas, their significance as important destinations, and their geographic distribution within the Madison urban area. The purpose was to analyze a representative sample of EJ areas and centers spread throughout the Madison urban area. Because the analysis included a transit travel time component, only areas within the current Metro Transit service area were selected. Figure 49, on the next page, shows the locations of the EJ areas and centers for which the accessibility analysis was conducted.

Table 32, on page 184, shows the current weekday peak period transit travel times from the EJ areas to all of the centers. Both in-vehicle travel time and walk time are shown. The in-vehicle time includes the transfer time where a transfer is

Madison Area M•P•O Metropolitan Planning Organization Transportation Planning Services

Regional Transportation Plan 2030

Madison Metropolitan Area & Dane County



Locations for Accessibility Analysis of Areas with Concentrations of Minorities and/or Low Income Families/Households

Employment/Activity Center

- Educational
- Employment
- Medical
- Recreational
- Retail

Environmental Justice Areas

Source Info:
Activity Centers: 5/05 (MAMPO).
Environmental Justice Areas: 10/06 (MAMPO).
Street Base: 4.05, Orthophoto Derived (MAMPO/DCLIO).
Functional Classifications: 1:024 (MAMPO, WDOT).
Hydrography: 12/00, 1:24,000 (WDNR).
Civil Division Limits: 7/06, Annexation Records (MAMPO/DCLIO).
MPO Boundary: 9.02 (MAMPO).

MAMP.plotrs
PRINTED: 10/26/06
FILE: H:\ArcMap\PlotJobs\RTP\Access Analysis.mxd

Lambert Conformal Conic Projection
Dane County Coordinate System - NAD 83(91).
Rev: 10/26/06

FIGURE 49

TABLE 32
2006* WEEKDAY A.M. PEAK PERIOD TRANSIT TRAVEL TIMES FROM EJ AREAS TO MAJOR EMPLOYMENT, OTHER CENTERS

Centers	Environmental Justice Areas: Broadway/Lakepoint				Northport (Vera Ct.)				Allied Drive				Sheboygan Avenue			
	In Vehicle Time (minutes)	Route(s)	Walk Distance (miles)	Walk Time	In Vehicle Time (minutes)	Route(s)	Walk Distance (miles)	Walk Time	In Vehicle Time (minutes)	Route(s)	Walk Distance (miles)	Walk Time	In Vehicle Time (minutes)	Route(s)	Walk Distance (miles)	Walk Time
Employment																
UW Research Park	38	12	0.08	1.6	51	22, 28	0.11	2.2	12	18	0.24	4.8	6	2 or 28	0.06	1.2
Middleton Business Park	53	12, 71	0.21	4.2	66	29, 71	0.23	4.6	66	18, 73/74	0.03	0.6	14	71	0.18	3.6
Stewart Street	26	16, 48	0.32	6.4	52	29, 47	0.49	9.8	20	18, 48	0.25	5	36	57, 47	0.41	8.2
WPS/South Towne	Walk				67	22, 17, 16	0.11	2.2	35	18, 16	0.18	3.6	34	71, 11	0.16	3.2
American Center	53	12, 25	0.06	1.2	65	29, 25	0.23	4.6	71	18, 5, 25	0.18	3.6	49	57, 25	0.15	3.0
Oscar Mayer	35	12, 57	0.21	4.2	19	22, 27	0.24	4.8	46	56	0.41	8.2	32	56	0.3	6.0
Downtown (GEF Bldgs.)	17	12	0.11	2.2	30	29	0.22	4.4	35	18, 5	0.09	1.8	15	72/71	0.21	4.2
Retail																
West Towne	60	12, 67	0.04	0.8	68	22, 28, 73	0.25	5.0	26	18, 73	0.18	3.6	27	14, 67	0.02	0.4
East Towne	41	16, 30	0.11	2.2	53	22, 20	0.09	1.8	75	18, 5, 30	0.004	0.08	58	57, 6	0.15	3.0
Education																
UW-Madison	23	12	0.21	4.2	35	22, 28	0.25	5.0	35	18, 4	0.14	2.8	15	56, 80	0.21	4.2
MATC – Truax Campus	50	12, 6	0.17	3.4	39	22, 20	0.2	4.0	69	18, 6	0.13	2.6	47	57, 6	0.26	5.2
Hospital/Medical																
St. Mary's Hospital	16	12, 13	0.21	4.2	44	29, 47	0.37	7.4	26	18, 4	0.04	0.8	21	56, 4	0.16	3.2
Parks/Recreational																
Goodman Pool/Park	12	12, 13	0.05	1.0	55	29, 13	0.23	4.6	28	18, 13	0.03	0.6	25	56, 13	0.15	3.0
Elver Park	65	16, 18, 50	0.09	1.8	84	29, 2, 50	0.28	5.6	31	18, 50	0.02	0.4	19	28, 50	0.02	0.4
McKee Farms Park	Not available				Not available				Not available				Not available			

* Service effective August 2006

TABLE 33
2000 (BASE YEAR) WEEKDAY A.M. PEAK PERIOD AUTO TRAVEL TIMES (IN MINUTES) FROM EJ AREAS TO MAJOR EMPLOYMENT, OTHER CENTERS

Centers	Environmental Justice Areas: Broadway/Lakepoint	Northport (Vera Ct.)	Allied Drive	Sheboygan Avenue	Greenway Cross	Braxton Pl.	Wexford
Employment							
UW Research Park	16.0	24.0	11.0	8.3	13.0	16.2	7.9
Middleton Business Park	23.1	21.6	18.1	14.1	20.1	22.7	12.7
Stewart Street	12.0	23.6	10.7	13.7	7.4	12.2	13.9
WPS/South Towne	6.5	20.5	12.6	15.6	10.3	11.8	15.9
American Center	19.1	16.1	25.2	27.1	22.9	20.0	28.4
Oscar Mayer	16.4	9.2	22.9	21.3	20.6	14.4	25.3
Downtown (GEF Bldgs.)	14.8	16.8	17.4	16.2	14.9	8.7	20.5
Retail							
West Towne	16.9	24.0	11.9	10.4	14.0	17.6	7.1
East Towne	16.5	13.5	23.1	24.5	20.8	17.4	26.3
Education							
UW-Madison	17.0	19.9	17.5	14.5	14.7	9.6	19.2
MATC – Truax Campus	14.6	10.6	21.2	22.6	18.9	15.6	24.5
Hospital/Medical							
St. Mary's Hospital	13.4	20.3	13.7	14.8	10.9	8.9	16.9
Parks/Recreational							
Goodman Pool/Park	9.4	18.9	11.8	14.8	9.5	8.9	15.0
Elver Park	17.9	25.8	12.2	12.2	14.9	18.5	9.0
McKee Farms Park	14.1	25.6	10.1	15.1	8.2	14.3	16.0

involved. The initial wait time at the bus stop is not included. This would typically add another 5-10 minutes to the total travel time. Five of the seven EJ areas are located on the fringe of the Metro service area outside the bus transfer points. Most of the centers analyzed are also located close to the outer edge of the Madison urban area and Metro service area. As a result, travel times for many of the O-D pairs are quite long, particularly for trips from one side of the urban area to the other (i.e., south-to-north, west-to-east). In contrast, travel time to downtown and the UW-Madison campus exceeds 45 minutes for only one of the EJ areas (Wexford, which has a 48-minute total travel time to downtown).

The Vera Court area on Madison's North side has the longest travel times, while the centrally located Braxton Place area has the shortest travel times. Most travel times from the Sheboygan Avenue area are also under 45 minutes. That area has a high level of transit service and ridership. Travel times for cross-town trips on the same side of the urban area (e.g., southwest to south, southeast to east) are generally 45 minutes or less. These trips usually require only one transfer and the distances are short enough to keep travel times reasonable. It is the trips from one side of the urban area to the other (e.g., southwest to north) that the transit system is unable to serve effectively. The combination of the longer distances, lack of express service, and the requirement of two transfers results in travel times of one hour or longer.

Table 33, on page 184, shows the 2000 base year peak period auto travel times from the EJ areas to all of the centers. Travel times are 25 minutes or less with three exceptions. The majority of travel times are 20 minutes or less. Most of the EJ areas are located with good access to the arterial roadway system, which contributes to the shorter travel times even for trips from one side of the urban area to the other.

Table 34, on the next page, shows the a.m. peak period in-vehicle transit travel times for the future year 2030 scenario with the recommended transit system improvements (see Figure 40 on page 131) compared to the "existing plus committed" transit system. There is a small (2-3 minutes or less) reduction in travel time to most centers from all of the EJ areas except the Wexford area. The fact that the modeling doesn't show a reduction in travel time for the Wexford area is puzzling, since it is located north of Mineral Point Road which is served by a new rail system in the recommended plan scenario. Further analysis is needed of this area. Overall, the reductions in travel time for the recommended plan scenario are greatest for trips to West Towne, the existing UW Research Park, and UW-Madison, which are all served by the proposed rail line. The consultants for the Transport 2020 Study are currently in the process of making some major improvements to the mode choice and transit portions of the MPO's regional travel model. The transit accessibility analysis will be revisited as part of that study following implementation of these improvements.

Table 35, on the next page, shows the auto travel times for the future year 2030 scenario with the recommended roadway system improvements compared to the "existing plus committed" (E+C) roadway system. Travel times from the EJ areas to the majority of centers are shorter under the recommended plan scenario, but the difference is less than one minute in almost all cases. Travel times are slighter longer from most EJ areas to WPS/South Towne, Oscar Mayer, East Towne, and MATC-Truax campus. The slightly longer travel times to these centers is probably due to minor regional traffic distribution changes as a result of the roadway capacity expansions in the plan scenario, particularly the Reiner/Sprecher Road corridor and CTH M (North) projects. The travel time impacts for non-EJ areas (other than the far east and west side areas where the projects are located) would be similar. The small differences in travel times between the recommended plan and E+C scenarios is not surprising since the roadway capacity improvements are almost all on the fast developing east and west periphery of the urban area where existing two-lane rural roadways need to be improved to urban standards. The auto travel times for the 2030 scenarios are considerably longer (3 to 7 minutes or more in some cases) than the 2000 base year, reflecting the increased future traffic congestion.

The EJ analysis conducted for this regional transportation plan update is just a small part of ongoing efforts by the MPO, WisDOT, and local units of government to comply with Title VI and address environmental justice. More in-depth EJ analyses are being or will be conducted as part of ongoing corridor studies (e.g., USH 51 North and South Corridors, Beltline Corridor, Transport 2020 (East-West Transit Corridor) Study). The MPO conducts an EJ analysis of the five-year Transportation Improvement Program (TIP) each year as part of the annual update. Also, implementing agencies conduct EJ analyses as individual projects move foreward through the environmental analysis and design stages.

TABLE 34
COMPARISON OF A.M. PEAK PERIOD IN-VEHICLE TRANSIT TRAVEL TIMES (IN MINUTES) FROM EJ AREAS TO MAJOR EMPLOYMENT, OTHER CENTERS FOR THE 2030 "EXISTING PLUS COMMITTED (E & C) PROJECTS" AND RECOMMENDED PLAN SCENARIOS

Centers	Broadway/Lakepoint			Northport (Vera Ct.)			Allied Drive			Sheboygan Ave.			Greenway Cross			Braxton Place			Wexford		
	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.
Employment																					
UW Research Park	48.1	46.3	(1.8)	57.3	57.3	0.0	10.9	10.9	0.0	9.3	9.0	(0.3)	51.8	39.7	(12.1)	29.0	27.2	(1.8)	4.2	4.2	0.0
Middleton Business Park	58.9	60.4	1.5	60.0	62.8	2.8	34.3	60.2	25.9	24.9	26.6	1.7	58.8	49.3	(9.5)	36.3	37.7	1.4	21.8	21.9	0.1
Stewart Street	45.7	42.9	(2.8)	n.a.	n.a.		35.7	34.7	(1.0)	40.8	34.6	(6.2)	17.9	17.9	0.0	35.9	28.3	(7.6)	n.a.	n.a.	
WPS/South Towne	2.2	1.8	(0.4)	34.8	34.7	(0.1)	18.7	18.4	(0.3)	23.1	19.5	(3.6)	16.5	28.0	11.5	14.8	11.2	(3.6)	41.5	40.5	(1.0)
American Center	n.a.	n.a.		n.a.	n.a.		n.a.	n.a.		n.a.	n.a.		n.a.	n.a.		n.a.	n.a.		n.a.	n.a.	
Oscar Mayer	32.1	31.7	(0.4)	17.8	17.8	0.0	43.9	42.8	(1.1)	35.3	35.3	0.0	39.4	44.0	4.6	13.6	13.4	(0.2)	46.0	46.5	0.5
Downtown (GEF Bldgs.)	24.1	24.4	0.3	43.3	43.2	(0.1)	32.5	31.6	(0.9)	12.0	14.8	2.8	30.3	33.7	3.4	6.4	6.6	0.2	35.5	38.4	2.9
Retail																					
West Towne	62.9	33.1	(29.8)	72.8	43.4	(29.4)	22.2	13.9	(8.3)	31.2	9.4	(21.8)	63.3	30.6	(32.7)	40.5	41.8	1.3	8.3	8.5	0.2
East Towne	46.2	47.5	1.3	35.3	34.5	(0.8)	57.4	57.7	0.3	31.8	32.6	0.8	59.1	49.4	(9.7)	28.8	29.7	0.9	60.2	62.3	2.1
Education																					
UW-Madison	16.1	15.8	(0.3)	25.1	26.6	1.5	29.6	28.6	(1.0)	14.3	26.8	12.5	25.7	13.3	(12.4)	17.3	1.6	(15.7)	31.9	32.7	0.8
MATC – Truax Campus	39.9	41.6	1.7	28.9	28.6	(0.3)	51.0	51.8	0.8	25.5	26.7	1.2	52.8	43.5	(9.3)	22.5	23.8	1.3	53.9	56.4	2.5
Hospital/Medical																					
St. Mary's Hospital	13.7	13.5	(0.2)	25.1	26.6	1.5	29.6	28.6	(1.0)	14.3	9.6	(5.0)	15.9	13.3	(2.6)	7.3	4.7	(2.6)	31.9	32.7	0.8
Parks/Recreational																					
Goodman Pool/Park	8.0	7.8	(0.2)	34.0	33.5	(0.5)	38.5	35.5	(3.0)	23.3	16.6	(6.7)	19.4	17.2	(2.2)	8.9	8.3	(0.6)	40.8	39.6	(1.2)
Elver Park	52.8	51.9	(0.9)	53.0	57.7	4.7	18.7	20.0	1.3	18.7	20.7	2.0	52.2	45.0	(7.2)	30.1	33.6	3.5	20.14	22.2	2.1
McKee Farms Park	n.a.	24.8		n.a.	40.7		n.a.	19.7		n.a.	28.2		n.a.	2.4		n.a.	15.6		n.a.	47.0	

TABLE 35
COMPARISON OF AUTO TRAVEL TIMES (IN MINUTES) FROM EJ AREAS TO MAJOR EMPLOYMENT, OTHER CENTERS FOR THE 2030 "EXISTING PLUS COMMITTED (E & C) PROJECTS" AND RECOMMENDED PLAN SCENARIOS

Centers	Broadway/Lakepoint			Northport (Vera Ct.)			Allied Drive			Sheboygan Ave.			Greenway Cross			Braxton Place			Wexford		
	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.	E+C	Rec. Plan	Diff.
Employment																					
UW Research Park	23.8	23.4	(0.4)	33.0	32.7	(0.3)	13.2	12.9	(0.3)	8.9	8.9	0.0	17.8	17.4	(0.4)	19.7	19.5	(0.2)	8.7	8.6	(0.1)
Middleton Business Park	32.4	31.9	(0.5)	30.5	28.6	(1.9)	21.9	21.5	(0.4)	17.1	17.0	(0.1)	26.4	26.0	(0.4)	28.7	28.8	0.1	13.8	13.8	0.0
Stewart Street	16.9	16.8	(0.1)	29.9	29.7	(0.2)	14.3	14.0	(0.3)	18.7	18.2	(0.5)	9.1	8.8	(0.3)	16.8	16.1	(0.7)	20.9	20.1	(0.8)
WPS/South Towne	6.7	6.7	0.0	24.4	24.1	(0.3)	18.1	18.6	0.5	22.5	22.8	0.3	14.6	15.3	0.7	15.8	16.6	0.8	24.7	24.7	0.0
American Center	23.0	23.0	0.0	20.6	20.2	(0.4)	36.4	36.1	(0.3)	34.8	34.8	0.0	32.9	32.8	(0.1)	25.0	25.5	0.5	40.1	41.2	1.1
Oscar Mayer	19.2	19.6	0.4	10.0	10.1	0.1	29.3	29.4	0.1	26.6	26.1	(0.5)	25.4	25.8	0.4	16.8	17.1	0.3	31.9	32.5	0.6
Downtown (GEF Bldgs.)	17.5	17.1	(0.4)	18.8	18.2	(0.6)	21.7	21.9	0.2	19.3	19.1	(0.2)	17.8	18.1	0.3	9.2	9.3	0.1	24.3	25.0	0.7
Retail																					
West Towne	25.5	25.0	(0.5)	34.3	32.3	(2.0)	14.9	14.6	(0.3)	11.9	11.7	(0.2)	19.5	19.0	(0.5)	22.7	22.3	(0.4)	7.3	7.4	0.1
East Towne	19.5	19.5	0.0	17.0	17.4	0.4	32.8	32.7	(0.1)	31.3	31.3	0.0	29.3	29.3	0.0	21.4	22.0	0.6	36.6	37.7	1.1
Education																					
UW-Madison	19.3	19.0	(0.3)	21.8	22.6	0.8	20.1	19.6	(0.5)	16.0	15.8	(0.2)	16.4	16.6	0.2	9.5	9.5	0.0	21.7	22.2	0.5
MATC – Truax Campus	16.8	16.8	0.0	12.9	13.2	0.3	30.1	29.9	(0.2)	28.3	28.4	0.1	26.6	26.5	(0.1)	18.5	19.1	0.6	33.6	34.8	1.2
Hospital/Medical																					
St. Mary's Hospital	16.4	16.2	(0.2)	23.4	23.4	0.0	16.9	17.0	0.1	16.3	16.4	0.1	13.0	13.2	0.2	9.9	9.7	(0.2)	21.3	21.8	0.5
Parks/Recreational																					
Goodman Pool/Park	11.3	11.1	(0.2)	21.7	21.7	0.0	15.9	15.7	(0.2)	19.5	19.4	(0.1)	12.5	12.4	(0.1)	10.1	10.2	0.1	22.5	21.8	(0.7)
Elver Park	26.0	25.5	(0.5)	36.6	24.4	(2.2)	13.3	13.0	(0.3)	14.6	14.0	(0.6)	18.7	18.5	(0.2)	24.4	24.5	0.1	10.4	10.1	(0.3)
McKee Farms Park	19.7	19.9	0.2	32.7	32.9	0.2	11.4	11.3	(0.1)	18.0	17.8	(0.2)	9.5	9.5	0.1	19.6	19.3	(0.3)	21.5	20.8	(0.7)

Further Planning and Concluding Comments

Further Planning and Concluding Comments

Meeting SAFETEA-LU Requirements

The Safe, Accountable, Flexible, Transportation Equity Act—A Legacy for Users (SAFETEA-LU) was signed into law in August 2005, reauthorizing the Federal surface transportation programs. SAFETEA-LU maintains the basic structure of Federal programs and planning requirements established in the landmark Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and continued under the Transportation Equity Act for the 21st Century (TEA-21) of 1998, but does make some changes in both.

SAFETEA-LU includes some additional requirements for regional or metropolitan transportation plans. It is anticipated that final regulations detailing the new metropolitan planning requirements will be adopted in early 2007. In the meantime, the Federal Highway Administration (FHWA) has issued interim guidance on the new planning requirements.

Metropolitan Planning Organizations (MPOs) such as the Madison Area MPO that had already initiated development of their regional transportation plans at the time SAFETEA-LU was adopted have the option of completing their plans under TEA-21 requirements. However, a plan amendment would need to be completed prior to adoption of the 2008 Transportation Improvement Program (TIP) in the fall of 2007 in order to make the plan fully compliant with SAFETEA-LU.

It is anticipated that the Madison Area MPO will need to complete an amendment of this plan to make it SAFETEA-LU compliant. SAFETEA-LU identifies the following six elements that must be included in metropolitan plans:

- Identification of transportation facilities
- Mitigation activities
- Financial plan
- Operational and management strategies
- Capital investment and other strategies to preserve existing and future transportation infrastructure
- Transportation and transit enhancement activities

In formulating these elements, the impacts on eight planning factors are to be considered. The eight planning factors are listed on pages 9-10 of this plan. It is expected that some additional work will be needed to address the mitigation activities and financial plan elements and more fully consider the security of the transportation system, one of the eight planning factors.

The environmental mitigation activities identified in the plan are to be developed in consultation with Federal, state, and tribal wildlife, land management, and regulatory agencies. MPO staff plan to meet with representatives of such agencies to review the plan and discuss environmental issues with them. It is not anticipated that any major environmental issues will be identified. With one exception, the western end of the proposed North Mendota Parkway project, all proposed major roadway and transit capacity expansion projects are located within or adjacent to existing rights of way. An environmental study is going to be conducted to determine the route for the North Mendota Parkway that has the least environmental impact. The purpose and need for the project is well documented in the North Mendota Parkway Alternatives Study (2003) and this plan.

As noted in the Financial Analysis section of the plan, further work is needed to identify the costs of projects for maintenance and preservation of the existing transportation system. MPO staff was relatively successful in putting together data on overall pavement conditions of the area's arterial and collector roadways. Data was also collected on local street expenses. However, the percent of expenses used for operation and management versus construction and for arterials and collectors versus local streets is unknown except for the City of Madison. In addition, MPO staff were unable to develop a good methodology for using the pavement condition data to project future maintenance and reconstruction needs and costs.

Security of the transportation system will also likely need to be further addressed with a discussion of emergency planning, alternate routes, and other issues.

Plan Update Following Completion of Ongoing Major Corridor Studies
Transportation planning is a continuous process with regional plans refined through more detailed subarea or corridor plans, the results of which are then incorporated into the next update of the regional plan. This plan recommends continuing or initiating a number of corridor studies. These include studies of the Beltline, Verona Road, and USH 51 and the Transport 2020 (East-West Transit Corridor) Study. Further more detailed operations and corridor level analyses are needed from these studies before specific recommended projects can be included in the regional transportation plan. Funding sources for the recommended projects must also be identified in order for them to be included in the fiscally constrained plan. When these studies are completed and regional agreement is reached on the recommended long-term transportation improvement projects and funding is identified, the plan will be amended to add the project(s).

Projects Beyond Financial Constraint
Section 5 of Table 24 beginning on page 135 of the plan identifies several potential arterial roadway capacity expansion projects, which will be needed, but for which funding has not been identified. Among these projects is the North Mendota Parkway. These "illustrative" projects are not part of financial constrained plan at this time because their inclusion would result in total costs exceeding the projected federal funding amounts that will be available. It is possible that some may proceed with local funding.

It is also possible, however, that this list may grow as the financial analysis is refined. The MPO will be attempting to come up with a methodology for better estimating future roadway preservation needs and available funding to address those needs. The list of future needed arterial roadway preservation projects in Section 4 of Table 24 is clearly not complete. In fact, there are no projects identified in the last time period from 2021 to 2030. Once the likely future projects and available funding have been identified, there may be less funding available for capacity expansion projects. Table 30 on page 168 of the plan shows that projected revenues for roadway related projects exceeds projected expenses by $318 million. While funding levels appear to match, it is unknown if this is enough to cover the as yet identified roadway preservation project needs.

In the case of public transit, implementing many of the service improvements recommended in the plan, including those resulting from the Transport 2020 (East-West Transit Corridor) Study, will require development of an alternative means of operations funding to ease the burden on local governments. The current funding structure relies too heavily on the local property tax. In 2005, around 25% of Metro Transit operating revenue came from local property taxes. With costs rising on average around 3% just to maintain the same service levels, federal funding maximized, and little or no recent state funding increases, local governments have been squeezed and the overall number of service hours has declined for the past several years. A new dedicated funding source will be necessary to allow any major expansion of service.

Regional Indicators: Measuring Progress Towards the Region's Transportation Goals
The Regional Transportation Plan 2030 identifies transportation improvements and strategies/implementation actions designed to bring the region closer to achieving the overall goal of an integrated and balanced land use and transportation system. The plan includes goals and policy objectives related to the overall transportation system, land use and transportation system coordination, and the different elements of the transportation system. MPO staff plan to develop a set of quantitative and qualitative indicators that can be used to periodically assess progress in meeting these plan goals and policy objectives.

The objective will be to develop indicators that are: outcome-based; regional in geographic scope to the extent possible; measurable over the long term; and based on publicly available data sources due to the high cost of data collection and the need for consistent and continuing reporting. Data needs will be identified and MPO staff will work with WisDOT and FHWA staff to address existing data deficiencies. Qualitative indicators and analysis will be used to supplement the more quantitative indicators.

Development and application of the regional indicators will allow the region to see where progress is being made towards the goals, where efforts need to be strengthened, and where we may need to rethink goals or the approaches to meeting them. The picture provided by such assessments will serve as an important foundation for future plan updates.

Critical Role of Land Use in Transportation Planning

Land use development and redevelopment, in terms of its type, intensity, design, and location, has a profound effect on our transportation system. While the transportation projects and strategies recommended in this plan will play an important role in addressing future transportation needs and improving the performance of the transportation system, achieving the land use policy objectives on page 129 will play an even greater role. Of the land use policy objectives, perhaps the most important is planning for concentrated, higher density, mixed-use employment/activity centers (particularly along transit corridors) and redevelopment of existing such centers to improve pedestrian/bicyclist accessibility and support transit service. The concentration of development in such areas and other smaller neighborhood centers, when properly designed, can reduce overall region-wide congestion and provide convenient mode choice options, while at the same time accommodating growth and expanded economic development opportunities.

Land use planning and development decisions are made at the local level. It is important that local communities carefully consider the transportation impacts of their land use plans and development decisions and coordinate such decision making with the MPO. This is particularly the case where those decisions involve changes to adopted land use plans upon which this transportation plan is based. The MPO can provide assistance to local communities, for example by reviewing traffic impact analyses prepared by developers or in some cases providing traffic forecasts using the MPO's regional travel forecast model. In the past, MPO staff has prepared multi-modal transportation impact analyses for urban service area (USA) amendment requests approved by the regional planning commission (RPC). With the creation of the new Capital Area RPC, there is an opportunity for the MPO to once again play a role in identifying important transportation issues as part of the USA amendment process. Once the new Capital Area RPC is established and its regional planning responsibilities are clarified, the MPO can work out with the new RPC arrangements for ensuring coordinated planning efforts.

Appendix A

Air Quality Impacts Analysis of the Recommended Regional Transportation Plan 2030

Introduction

The Federal Clean Air Act (CAA) has established National Ambient Air Quality Standards (NAAQSs) in order to protect public health, safety and welfare from known or anticipated effects of certain "criteria" pollutants. They are called criteria air pollutants because the agency has regulated them by first developing health-based criteria as the basis for setting permissible levels. Geographic areas or air quality control regions that meet or do better than the NAAQS are designated by the United States Environmental Protection Agency (USEPA) as "attainment" areas. Areas that are shown through air quality monitoring to exceed a NAAQS are designated as "non-attainment" areas for that pollutant. For areas that are designated as non-attainment, states must submit State Implementation Plans (SIP) that demonstrate through air quality modeling how the area(s) will attain the NAAQS through implementation of air pollutant reduction measures and then later demonstrate through air quality monitoring attainment of the NAAQS.

Ground level ozone and carbon monoxide (CO) are among the criteria pollutants for which NAAQSs have been designated. Ground-level ozone is produced by a combination of pollutants from many sources, including motor vehicles and electric power plants burning fossil fuels. The two primary smog-producing pollutants are oxides of nitrogen (NOX) and volatile organic compounds (VOC). They react together in the presence of heat and sunlight to form ozone. Nearly one-half of Dane County's smog-producing pollutants come from motor vehicles, as well as other gasoline and diesel engines that power everything from construction equipment to lawn mowers. This ground level ozone should not be confused with the good ozone that occurs naturally in the Earth's atmosphere—10 to 30 miles above the Earth's surface—where it forms a protective layer that shields us from the sun's harmful ultraviolet rays.

In 1997, USEPA established a new eight-hour standard of 0.08 parts per million for ground-level ozone. Based upon air quality monitoring, a number of southeastern Wisconsin counties were designated non-attainment areas for ozone under the new standard in 2004. Most of the counties had been designated non-attainment under the old one-hour standard as well. The Wisconsin Department of Natural Resources has until June 15, 2007 to prepare a new SIP to attain the eight-hour standard. For areas designated as non-attainment, MPOs must demonstrate conformity of the long-range regional transportation plan (RTP) and transportation improvement program (TIP) with SIP. This conformity assessment involves a comparison of forecast mobile sector (motor vehicles) emissions from the RTP and TIP with the SIP.

Dane County was designated as attainment for ground-level ozone. Dane County is also in attainment of the NAAQS for all other criteria pollutants. While Dane County was designated attainment for ozone, monitoring data shows that the air quality is considered unhealthy during some summer days and that the county could become non-attainment for ozone in the future. WisDNR's air quality modeling also shows that air pollutant emissions in Dane County contribute to ozone formation in the state's southeastern counties, which are non-attainment. The Dane County Clean Air Coalition (CAC)—a private/public partnership of businesses, schools, government agencies, and citizens—has been formed to work together to voluntarily reduce air pollution, keep the air healthy, and help ensure Dane County continues to meet state and federal air quality standards. The Madison Area MPO is a member of the CAC.

Regional Transportation Plan Air Quality Impacts

While Dane County is in attainment of the ozone standard and thus the Madison Area MPO was not required to conduct a conformity analysis for the Regional Transportation Plan 2030, the MPO nonetheless conducted an air quality emissions analysis of the plan. In most respects, this analysis met USEPA's criteria for conformity determinations, including use of the most recent planning assumptions and the most recent emissions estimation model, USEPA's Mobile 6.2 model.

Motor vehicle emissions are influenced by a number of factors such as vehicle age, vehicle fleet mix, average speed, average trip length, temperature, miles traveled, and engine condition. In non-attainment areas, federally mandated emission control regulations such as vehicle inspection and maintenance programs also affect emissions. The RTP land use-related and roadway and transit facility recommendations can reduce motor vehicle emissions to some extent by reducing vehicle

trips and trip lengths, vehicle miles traveled (VMT), and by reducing traffic congestion. RTP recommendations related to bicycle and pedestrian facilities, travel demand management (TDM) programs, and transportation system management (TSM) measures can also have an impact on motor vehicle emissions, but the MPO's regional travel forecast model is not capable of estimating the impacts of these facilities and measures on vehicle trips and VMT.

The air quality analysis showed that the largest impact on motor vehicle emissions will occur from changes in the motor vehicle fleet as newer, lower pollutant emitting vehicles replace the older higher emitting vehicles. The transportation improvements in the RTP will have little relative impact on vehicle trips and VMT. Table A-1 shows the average vehicle speed, vehicle trips, VMT per day, and pollutant emissions for: (1) the 2000 base year scenario; (2) the 2030 future year scenario with the existing plus committed (E+C) roadway and transit system[1]; and (3) the 2030 future year scenario with the recommended roadway capacity expansion projects and the recommended transit service improvements. The roadway capacity improvements are listed in Sections 1 (those already programmed) and 2 (additional recommended projects) of Table 24 on pages 135-136 and illustrated in Figure 41 on page 134. The transit system improvements include the hybrid rail and express bus system illustrated in Figure 40 on page 131 as well as additional local bus service improvements.

The 2000 base year vehicle trips of 1.618 million are estimated to produce 12.187 million VMT on an average weekday in the Madison urban area and surrounding Dane County at an average speed of 35.8 miles per hour (mph). In the 2030 E+C scenario, the forecast land use development growth increases vehicle trips from 1.618 to 2.314 million and VMT from 12.187 to 18.270 million. This growth in traffic and implementation of only the committed transportation system improvements results in increased congestion levels, dropping the system-wide average speed to 29.6 mph. Pollutant levels still fall even though congestion levels rise because of newer vehicles gradually replacing older (more polluting) vehicles over time. By implementing the roadway and transit improvements recommended in the plan, average system-wide speed increases to 31.2 mph, although still well below the 2000 base year speed of 35.8 mph. Vehicle trips per day drop from 2.314 to 2.310 million compared to the 2030 E+C scenario and VMT drops from 18.270 to 18.207 million. The increase in average speed and slight reductions in trips and VMT result in a slight reduction of VOC, NOX, and CO emissions for the 2030 recommended plan scenario compared to the 2030 E+C scenario.

TABLE A-1

Regional Transportation Plan 2030 Air Quality Impacts

Land Use/Transportation Scenario	Avg. Speed MPH	Vehicle Trips Per Day	Vehicle Miles of Travel Per Day	Pollutants Tons/Day		
				VOC	CO	NOx
2000 Land Use & Existing+Committed Highway Network & 2004 Bus Transit	35.8	1,617,857	12,187,307	6.47	236.13	18.54
2030 Land Use & Existing+Committed Highway Network & 2004 Bus Transit	29.6	2,313,781	18,269,751	6.47	105.56	6.08
2030 Land Use & Recommended Plan Roadway Network & Express Bus/Rail Transit	31.2	2,310,319	18,207,375	6.32	105.18	6.06

[1]The existing plus committed (E+C) systems include facilities that existed in 2000, capacity expansion projects that were built since then, and programmed projects with committed funding in the MPO's 2002-2006 Transportation Improvement Program (TIP).

Appendix B

Discussion of Roadway Levels of Service (LOS) for Motorists

Roadway level of service (LOS) is a concept, which denotes the different operating conditions that occur on a roadway and the perception of those conditions by motorists when accommodating various traffic volumes. It places traffic flow conditions into six levels of service, designated A through F, from best to worst. The concept can also be used for controlled street intersections with queuing time used to measure the LOS.

A nationally recognized LOS concept has also been developed for public transit. LOS concepts have also been developed for bicycling and walking, although they are not as well established. Factors considered for transit LOS include frequency of service, span of service, reliability of service, bus stop facilities and amenities, and accessibility of bus stops. The LOS concept was used in the Madison Area MPO's 2000 Bicycle Transportation Plan to denote the suitability of streets for bicycling. Factors included motor vehicle traffic volume, traffic speeds, inside lane width, presence of a bike lane or paved shoulder, presence of parking, and land use. The various modes interact with each other such that LOS improvements for one mode may improve or lower the LOS for other modes. Research is currently being conducted to attempt to develop a multimodal LOS for urban streets.

The factors that may be considered in evaluating roadway LOS for motorists include the following:

1. Operating speed and travel time
2. Traffic interruptions or restrictions
3. Freedom to maneuver
4. Safety
5. Driving comfort and convenience
6. Economy

However, a more practical approach to ascertaining LOS commonly uses operating speed and the ratio of traffic volume to capacity. Operating speed is the highest overall speed at which a motorist can travel on the roadway under favorable weather conditions and under prevailing traffic conditions without at any time exceeding the safe speed as determined by the design of the roadway. The volume-to-capacity (V/C) ratio can be thought of as a "desired capacity" as the capacity is typically related to a LOS selected for a facility. For example, for the traffic modeling conducted for this plan LOS E was used as the capacity or V/C of 1.0. It refers to the amount of traffic that a roadway can accommodate while still maintaining a quality of service appropriate to the indicated LOS. Typically, this refers to the peak hour or peak period although daily capacities are currently used in the MPO's regional travel model. The daily capacity assumes a certain percentage of the traffic occurs in the peak and off-peak periods.

In addition to the LOS selected, factors that determine the capacity of a roadway include the following:

1. Number of travel lanes
2. Width of travel lanes
3 Operating speed
4. Presence or absence of shoulders (for rural or access controlled roadways)
5. Grades
6. Presence or absence or a median
7. Intersection design (% of turns from exclusive lanes) (for surface streets)
8. Spacing and timing of traffic signals (for surface streets)
9. Spacing of driveways (if any) (for surface streets)
10. Presence or absence of parking and bus stops (for surface streets)
11. Volume of trucks, buses, and other large vehicles

The Highway Capacity Manual published by the Transportation Research Board and the AASHTO Geometric Design of Highways and Streets ("Green Book") list the following levels of service: A = Free flow; B = Reasonably free flow; C = Stable flow; D = Approaching unstable flow; E = Unstable flow; and F = Forced or breakdown flow. The following descriptions provide more detail on the characteristics of the different levels of service:

Level of Service A
Describes a condition of free flow with low traffic volumes and high speeds. Traffic density is low with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other motor vehicles, and drivers can maintain their desired speeds with little or no delay.

Level of Service B
This is still in the zone of stable flow, but with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted.

Level of Service C
This is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most motorists are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, but the general level of comfort and convenience begins to decline noticeably at this level.

Level of Service D
This represents high density, but still generally stable flow with tolerable operating speeds being maintained. However, this is approaching unstable flow and speed and freedom to maneuver are severely restricted. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Small increases in traffic flow will generally cause operational problems at this level. Motorists' comfort and convenience are low, but conditions can be tolerated for short periods of time.

Level of Service E
This represents operating conditions at or very near the capacity level. Operations are reduced to lower speeds than in LOS D (typically in the neighborhood of 25 mph), but are still relatively uniform. Freedom to maneuver is extremely difficult and usually accomplished by forcing a vehicle to accommodate such maneuvers. Comfort and convenience levels are extremely poor and frustration levels high. Flow is unstable and there may be momentary stoppages. Small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

Level of Service F
This describes forced flow operation at low speeds or breakdown flow. This condition exists wherever the amount of traffic approaches a point that exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves and are extremely unstable. Stoppages may occur for short or long periods of time because of downstream congestion. In the extreme, both speed and volume can drop to zero.

The Wisconsin Department of Transportation's State Highway Plan provides a LOS matrix that converts the alpha-character scale to a numeric scale in order to facilitate a more detailed comparison between roadway segments and to compare segment values with threshold values that trigger consideration of capacity expansion improvements. For example, LOS D is represented by a numeric LOS range of 4.01 to 5.00; if the computation falls midway within the LOS D range the numeric value for that LOS is 4.5. WisDOT has adopted a LOS threshold value of 4.0 for designated Corridors 2020 (C2020) Backbone Routes, 4.5 for C2020 Connector Routes, and 5.5 for other arterials and collectors. The lower threshold values for C2020 routes reflect their importance for regional mobility and economic development purposes. See WisDOT Facilities Development Manual.

Appendix C

List of Significant Public Comments on the Draft Plan and MPO Responses

Comment: Support goals/policy objectives/recommendations and regional transportation improvements identified in the plan.
Response: Thank you.

Comment: Remove the CTH C (North City Station Dr. to STH 19) project from Table 24 Potential Arterial Street and Roadway Improvements 2007-3030: Section 1. Potential Capacity Improvements & Studies Already Programmed, because it will be completed by the end of 2006.
Response: Project will be removed.

Comment: Add recommendation under Streets/Roadways to conduct a study of Egre Road as a future regional arterial roadway.
Response: Recommendation for study will be added.

Comment: Supports recommendation for official mapping and eventual capacity improvement of Hoepker Road (USH 51 to CTH C) and asks that the project be given a higher priority for Federal funds.
Response: The source of funding for the project is shown in Table 24 as Local or STP Urban. Prioritization of projects for STP Urban funding is made as part of preparation of the Transportation Improvement Program (TIP) based upon the MPO's adopted project selection criteria.

Comment: Supports the Thompson Road Overpass of USH 151 in City of Sun Prairie and asks that stronger endorsement be made of the project due to congestion relief benefits to adjacent interchanges.
Response: The following recommendation will be added to the Streets/Roadways section: "Continue or initiate detailed planning and construction of collector street connections and extensions that help complete the "grid" street network, thereby efficiently distributing traffic on the regional system." The Thompson Drive overpass project will be listed along with others as examples of currently planned or proposed such connections.

Comment: Supports proposed rail transit system and extension to City of Sun Prairie and encourages MPO to retain concept as part of the plan.
Response: The rail transit system concept will be retained as part of the final plan.

Comment: Show East Washington Avenue as a regional bikeway.
Response: The regional bikeway system map focuses on off-street paths and those on-street routes with low traffic volumes that would be part of a signed bike route system. The plan recommends bike lanes on all arterial and collector roadways where feasible and appropriate. The 2000 regional bicycle transportation plan identifies major roadways where bike lanes are needed, and this analysis will be updated when the bicycle plan is updated.

Comment: A north-south off- and/or on-street bicycle route is needed between Madison and De Forest.
Response: Because of the uncertainty regarding the location/type of route, an arrow will be added to the bikeway map north of the airport with a note to identify Madison – De Forest bikeway connection. Potential off-street routes include the rail corridor or USH 51.

Comment: Add connection from Madison – Sun Prairie bikeway route to the USH 151 corridor route or extend rail corridor route to Sun Prairie.
Response: The currently proposed Madison – Sun Prairie regional bikeway route does utilize the USH 151 corridor path/underpass. Another longer term planned regional bikeway will be added in the rail corridor, extending it from the current terminus at Felland Road to Sun Prairie.

Comment: Add off-street or more direct on-street bikeway route in the Southeast Madison/McFarland area connecting the E-Way segment of the Capital City Trail to the Glacial Drumlin Trail.
Response: The two connections currently shown utilize Nob Hill underpass/Broadway/Femrite Dr./Marsh Rd. or the proposed Capital Springs path/Siggelkow/Marsh Rd. No other more direct connections are possible other than the South Towne Drive, which would not be a designated route.

Comment: Strengthen Recommendation #9 under Bicycle Transportation, which refers to acquiring land or easements for bikeways.
Response: Some editing revisions will be made to the recommendation.

Comment: Make reference to transit-oriented developments (TODs) to make transit more viable.
Response: Policy Objectives #3-#6 and Recommendations #1, #3, and #4 under Land Use and Transportation System Coordination all address promotion of transit/pedestrian-friendly development.

Comment: Include "complete streets" language to ensure all street plans take into account bicycles and pedestrians.
Response: While the term "complete streets" is not used, the concept is incorporated into the plan. See, for example, Policy Objective #3 under Streets/Roadways, Policy Objective #3 and Recommendations #8 and #10 under Bicycle Transportation, and Policy Objectives #6 and #7 and Recommendations #4 and #7 under Pedestrian Transportation. In addition, a new Policy Objective #9 is being added under Streets/Roadways that states, "Provide bicycle and pedestrian accommodations along and across all streets in conjunction with street construction and reconstruction where feasible and appropriate in accordance with the U.S. Department of Transportation Policy on Integrating Bicycling and Walking into Transportation Infrastructure."

Comment: Land use growth should be based on the planned transit corridors and roadway corridors with available capacity. This should be done and then compared with the "adopted plans" land use assumption.
Response: Land use growth was allocated based on a realistic forecast of where growth will occur while also remaining generally consistent with regional land use plan policies. The MPO does not have any authority over land use development and it would not be appropriate to prepare a transportation plan based on unrealistic land use assumptions. It is anticipated that as part of the Transport 2020 Study, a land use scenario that assumes an even greater amount of redevelopment and development around the proposed rail transit stations will be tested to see how much additional transit ridership is generated.

Comment: Scale back capacity-expanding roadway projects and create more transportation alternatives. These alternatives will be necessary as gasoline prices increase and supplies decrease.
Response: The plan calls for a major expansion of transit services and the pursuit of a dedicated source of transit funding to support this expansion. The plan also recommends bicycle and pedestrian facility improvements. The plan also recommends some roadway expansion projects as part of a balanced overall plan, recognizing the limitations of transportation alternatives for serving many trips and that the auto will continue to be the primary mode of transportation for the foreseeable future. The potential impact of rising oil prices (if they do indeed continue to rise during the plan period) on use of alternative transportation and regional development is impossible to predict at this time. The plan recommends ambitious improvements in transit service and bicycle facilities in order to provide mode choice wherever possible. Travel and land use trends will continue to be monitored and any major shifts can be factored into future plan updates.

Comment: Provide positive incentives for use of alternative transportation through better service rather than negative incentives (e.g., increased parking costs).
Response: The plan proposes a balanced approach that includes enhanced transit service, improved pedestrian and bicycle facilities, and ridesharing/TDM services and programs (e.g., subsidized bus passes), as well as strategies (e.g., parking management) that recognize the high costs of driving.

Comment: Interstate 39/90/94 Bridge over Lien Road needs to be widened when it is reconstructed.
Response: This project is in the plan and the bridge will be widened to accommodate four lanes of traffic, bike lanes, and sidewalks. See Table 24, Section 1. Potential Capacity Improvements & Studies Already Programmed.

Comment: It should be demonstrated that the rail transportation alternatives being studied as part of the Transport 2020 Study and Streetcar Study are the best alternatives.
Response: The plan recommends fixed-guideway transit service in the East-West Transit Corridor and improved downtown/UW campus circulator service, but does not recommend a particular technology as that will be determined as part of the ongoing studies. In order to be given approval by the Federal Transit Administration to proceed to preliminary engineering and to later receive any Federal funding, any rail service proposed will need to meet stringent cost-benefit criteria.

Comment: Supports creation of regional transit authority (RTA) or district.
Response: The plan recommends implementation of the finance/governance recommendations from the Transport 2020 Study, which will likely include an RTA, and also includes a separate recommendation to pursue a dedicated source of funding for transit. See Recommendations #1 and #10 under Public Transit. Language will be added under #1 mentioning creation of an RTA as the likely recommendation.

Comment: Transit accommodations should be built into every roadway improvement.
Response: The plan recommends addressing the needs of all users, including transit users, when planning and designing roadways. See Policy Objective #3 under Streets/Roadways. It also specifically recommends continuing efforts to implement traffic management strategies that give priority to transit, including bus lanes. See Recommendation #5 under Public Transit. Text will be added to identify a few roadways where addition of bus lanes may be possible and should be considered.

Comment: Bus routes should be simplified and Sunday service added to the airport.
Response: The plan recommends continuing to improve and expand local bus service through reduced travel time, increased service frequency, and other means. Details regarding specific routes or service to particular destinations are addressed as part of the Transit Development Program and sub-area planning efforts.

Comment: Provide for many types of transit service (express, commuter, core, circulator, connecting, and service for special needs populations). Increase the goal for increasing transit ridership from 30-40% to 100-200%.
Response: The plan recommends this. See Public Transit Recommendations #1-#4. The 30-40% increase in transit ridership cited is not a goal, but a forecast from the regional travel model that assumes a very aggressive increase in transit service that goes beyond what is being considered for a start-up rail system in the current Transport 2020 Study. Over 3/4s of current weekday transit trips are work and school trips destined for the downtown/UW campus area. While the plan assumes some redevelopment in the central area, most growth will occur on the urban periphery and in outer area communities where serving trips by transit is much more difficult. This limits the potential for increasing the share of trips made by transit. The plan does recommend transit-supportive development to make transit more viable in the future.

Comment: Consider other travel needs besides work trips.
Response: While much of the information provided is for work trips, the plan does consider travel needs for all trips. The work trip is particularly important because it serves as an anchor for many other trips (i.e., trip chaining) and accounts for ½ of all weekday transit trips. Most work trips are also made during the peak periods.

Comment: The State should provide increased transit funding.
Response: The plan recommends supporting increased state funding to support regional transit system improvements along with a dedicated local funding source. See Recommendation #10 under Public Transit.

Comment: The plan should include a goal of reducing VMT by 20% by 2015 and should support financial incentives for people driving less and recognize the area's air quality issues. The adverse health effects from increased motor vehicle emissions will disproportionately impact the area's minority and low-income populations.
Response: The VMT reduction goal is unrealistic given trends over the last thirty years. The plan recommends TDM incentives and alternative transportation incentive programs. See Recommendations #3 and #5 under TDM/Ridesharing. It does not propose any pricing or user-pay programs (e.g., pay-as-you-drive insurance), which would generally need to be implemented at a state level. Air quality emissions modeling was conducted for the recommended plan using the travel model and emission factors provided by WisDNR. The modeling showed that Year 2030 emissions would be less under

the recommended plan scenario than under the 2030 Existing Plus Committed Projects scenario and significantly less than the Base Year 2000 scenario. Reducing congestion problems in areas such as the Verona Road/Beltline corridor will improve air quality.

Comment: The MPO should be designated a regional transit authority with control of all transportation funding in the area. In order to meet VMT reduction goal, it should be required that ¼ of funding be used for transit and ¼ for TDM.
Response: Special finance and governance mechanisms for regional transit service are being studied as part of the Transport 2020 (East-West Transit Corridor) Study, and require state enabling legislation.

Comment: Supports rail service from Evansville and Oregon/Fitchburg to Madison.
Response: The plan recommends pursuing express bus service from these communities and preserving rail corridors for potential rail service in the long-term future.

Comment: Supports increasing service in developed areas as well as in developing areas and outlying communities and providing more incentives to use the bus.
Response: The plan recommends both of these. See Public Transit and TDM/Ridesharing Recommendations.

Comment: Provide incentives for people to live closer to where they work.
Response: This is mostly beyond the scope of the transportation plan. The plan does recommend continuing and expanding the Smart Commute Program. See Recommendation #8 under TDM/Ridesharing.

Comment: It is important that population, labor force, and employment changes be tracked and compared to the forecasts. It is also important that the MPO coordinate land use-transportation planning efforts with the new Capital Area Regional Planning Commission.
Response: The following new Recommendation #5 will be added under Land Use and Transportation System Coordination: "The Madison Area MPO should work with the new Capital Area Regional Planning Commission to coordinate planning efforts and track socioeconomic changes and land use growth."

Comment: Add new Recommendation #9 under TDM/Ridesharing that states "Explore public-private partnerships for door-to-door transit services to reduce single-occupancy vehicle trips."
Response: Recommendation will be added.

Comment: The WisDOT Bureau of Planning & Economic Development provided the following comments on the environmental justice analysis for the plan:

1. The accessibility analysis should include a map that shows the selected environmental justice areas and destinations and should also include a discussion of how the locations were selected. Also, data should be provided for the travel time analysis.
2. Information should be provided on the number and percentage of the MPO's population that is minority, low-in come, and/or autoless. This information should be provided by municipality.
3. Information should be provided describing specifically what constitutes a "high" concentration of the above-referenced EJ population groups and what level of data (Census block groups, TAZs, etc.) was used.
4. Information should be provided comparing travel times to work for the EJ population groups versus the general population.
5. A statement should be added noting that additional EJ analysis will be completed as projects move forward and as part of corridor and sub-area studies.
6. A statement should be added that while roadway preservation projects generally have beneficial impacts to adjacent and nearby properties, some negative impacts may occur during project construction.
7. Transit service to the intercity bus station and airport should be discussed.
8. Information should be provided on efforts to involve EJ populations in the planning process.

Response: The following revisions will be made to the analysis to incorporate these comments:

1. A map showing the locations of the EJ areas and destinations selected for the travel time analysis will be provided, and the reasons for selecting these locations will be explained. Tables will be provided showing 2000 base year auto and existing 2006 transit travel times. Tables will also be provided comparing the travel times for the 2030 Existing Plus Committed Projects (E+C) and Recommended Plan scenarios.

2. This information will be provided.
3. This information will be provided.
4. A new sub-section will be added with this information.
5. Such a statement will be added.
6. The recommended clarifying statement will be added.
7. Information on transit and taxi service to the intercity bus station and airport will be provided.
8. Efforts to involve EJ populations is discussed in the first (background) section in the plan.

Comment: The Commuter (Hybrid) Rail Transit Alternative map on page 145 of the plan shows express bus service from Verona to Madison, but the route does not run on Monroe Street. Monroe Street is projected to be very congested and express bus service should be considered along the street to encourage more drivers to take the bus.
Response: The map on page 145 shows how express bus service might feed into and complement a potential "hybrid" (i.e., uses rail technology that allows running on street as well on a rail line) rail transit system—one of the options currently being considered as part of the Transport 2020 (East-West Transit Corridor) Study. An operational detail is whether any or all of the express routes would continue to and through the downtown area, thereby providing express service between the bus transfer points. If the Verona express route were continued to downtown, it might be decided to use a more direct routing such as Monroe Street rather than connect to the West Transfer Point which is served by the rail system. Such a decision would be made at the time the service is going to be implemented.

Comment: Increase the number of planned off-street bicycle paths in the plan.
Response: The plan recommends a very ambitious regional bikeway system with complementary local off-street paths and routes. See Figure 45 on page 152. The plan also recommends planning and development of other local paths and routes, using the regional bikeway system as a framework. Planning of additional neighborhood level bicycle facilities is beyond the scope of this regional plan.

Comment: In the discussion of commuting patterns on page 26 it would be useful for people to know that the City of Middleton and perhaps other Madison area communities are also net importers of jobs in addition to the City of Madison.
Response: A note will be added that Middleton and Monona also have more employment than resident labor force.

Comment: The City of Middleton has a draft Traffic Management Plan that recommends some changes to the existing functional classification of several city streets.
Response: These recommended changes will be considered and addressed as part of the next update of the MPO's roadway functional classification system. However, keep in mind that the MPO's classifications must be based on state rules with specific criteria for classifying the roadways.

Comment: Most of the City of Middleton's traffic signals can be pre-empted by emergency vehicles.
Response: A note will be added in the TSM/Operations subsection under Streets/Roadways that traffic signals in the City of Middleton and other communities are also being equipped with emergency vehicle preemption capability.

Comment: It is not clear how the discussion of emergency evacuation planning for the City of Madison that has been required by the Governor fits in the ITS section.
Response: It will be moved to the TSM/Operations subsection on page 39 under a new sub-heading of "emergency management."

Comment: Add language about the limited ability of private taxicabs to accommodate persons with disabilities in the discussion of taxi service under Public Transit.
Response: Language will be added.

Comment: It would be useful to point out that the cost of roadways is not entirely covered by user fees rather than just providing this information in the Public Transit section.
Response: A footnote will be added in the discussion of Metro operating costs and revenues under Public Transit indicating that the cost of roadways is not completely covered by user fees, but is supplemented by public funding. Data from WisDOT's 1994 Highway Cost & Pricing Study will be cited.

Comment: Add a note about the 2006 Middleton service improvements in the discussion of transit service needs and recent improvements to address some of those needs. Also, note that Middleton is working with Metro to implement Saturday service in 2007 and that Metro is working with several suburban communities (e.g., Sun Prairie, Oregon, Cross Plains) to implement limited commuter service.
Response: This information will be added.

Comment: Revise Figure 24, Existing Bicycle Facilities Map, to show three recently completed facilities, including the Parmenter Street underpass.
Response: The map will be revised to show these facilities.

Comment: Add information about the recent reconstruction of the Middleton Municipal Airport—Morey Field and add a note that the future of Blackhawk Airport in Cottage Grove is in doubt due to development pressures. Also, add a reference to the Middleton airport in the Goals/Policy Objectives/Recommendations section.
Response: The information will be added and a recommendation will be added to continue to maintain and improve the Middleton airport as the primary reliever airport for the Dane County Regional Airport.

Comment: Add language to the note following Recommendation #1 under Land Use and Transportation System Coordination that other communities besides Madison have or are revising their ordinances as recommended.
Response: Language will be added noting this.

Comment: Add trucks to the list of roadway users in Policy Objective #3 under Streets/Roadways.
Response: Trucks will be added to the list.

Comment: Revise Policy Objective #4 under Streets/Roadways regarding an interconnected roadway system to specifically mention that cul-de-sacs should be avoided whenever possible.
Response: This language will be added.

Comment: Pleasant View Road may need to be four lanes between USH 14 and Airport Road and an interchange may eventually be needed at Pleasant View Road and USH 14.
Response: Our traffic forecasts do not show a need for either of these projects within the planning period. However, we will monitor the situation closely.

Comment: Show the North Mendota Parkway project as straddling the last two time periods in Table 24, Potential Arterial Street and Roadway Improvements, 2007-2030.
Response: The lack of an identified funding source makes it more appropriate to place the project in the last time period for now.

Comment: Middleton is also investigating potential circulator service, possibly using a trolley bus, between downtown and Greenway Center.
Response: Recommendation #2 under Public Transit will be revised to recommend exploring this.

Comment: The fact that persons with disabilities have limited access to private taxicabs should be addressed in the recommendations.
Response: A new Recommendation #7 under Paratransit/Specialized Transportation will be added, stating "Continue efforts to increase the accessibility of private taxicab service for persons with a disability."

Comment: Incorporate two planned Middleton bicycle facilities not shown on Figure 45, Planned Regional Bikeway System—an east-west path on the north side and an underpass at the Park St./University Ave. intersection.
Response: These will be added to the map.

Comment: Make segments of the Pheasant Branch Trail the identified regional route rather than Pheasant Branch Road and Donna Drive. The plans are to pave these trails. The Middleton City Council is on record opposing the addition of bike lanes on Pheasant Branch Road.

Response: The identified segments of the Trail will be shown as the regional route with the understanding they will be paved. Pheasant Branch Road will still be shown as local route. The map does not address on-street bike lane recommendations.

Comment: Delete the Parmenter Street ped/bike underpass from Table 25, High Priority Off-Street Bicycle Facility Projects as that project will be completed in November.
Response: The project will be deleted and the existing facility map revised to add the facility.

Comment: Add a recommendation under Rail Transportation to promote installation of suitable gates at rail crossings in order to allow establishment of quiet zones.
Response: Such a recommendation will be added.

Comment: Revise Figure 39, Planned Future Land Use Growth, to incorporate the City of Middleton's Westside Neighborhood concept on the Erdman property and make corrections to the Discovery Springs Business Park area.
Response: The map will be revised to properly reflect plans in these areas.

Comment: Indicate in the Introduction section when discussing SAFETEA-LU that the plan is being completed under TEA-21 and will be revised to incorporate all SAFETEA-LU requirements next year, as noted in the new concluding section.
Response: Such language will be added.

Comment: Should the new state law regarding bicyclists and demand-actuated signals be mentioned as part of the discussion of bicyclist barriers in the Bicycle Transportation section?
Response: A footnote will be added referencing the new state law, but noting that the signals should be still be adjusted to detect bicycles.

Comment: The information in Table 31 in the Financial Analysis section does not match Table 30. Table 31 does not indicate funds being spent in the second and third time periods for the plan.
Response: The information in Table 31 attempts to further subdivide the information in Table 30 at a more detailed level. However, most of the information at this more detailed level is unknown and confusing to the discussion presented in the text. Therefore, Table 31 will be deleted.

Comment: Add Johnson Street (Randall to Bassett) to the list of examples of arterial streets where bus lanes should be considered in the future in the note to be added following Recommendation #5 under Public Transit on page 146.
Response: This segment of Johnson Street will be added to the list of examples.

Comment: In the discussion of the travel modeling scenarios on page 126, edit the last paragraph to clarify that projects associated with ongoing corridor studies are not included in the plan because the specific type of improvement and funding have yet to be determined. Specific project recommendations generated by these studies will need to be added to the plan as part of a plan amendment.
Response: The text will be edited to clarify this.

Comment: Clarify the definition of "planned" versus "potential" park-and-ride lots in Figure 44, Park & Ride Lot System. "Planned" indicates some formal discussion or agreements have occurred as part of a WisDOT improvement project or the location has been identified as part of a study, while "potential" indicates simply that the lot is in a general location of priority.
Response: This language will be added to the map legend.

Comment: WisDOT Southwest District is planning to conduct a freeway conversion study on USH 12 from Parmenter Street to STH 19. Please add to the plan.
Response: A recommendation for this the study will be added. The study will also be added to Table 24 and Figure 41.